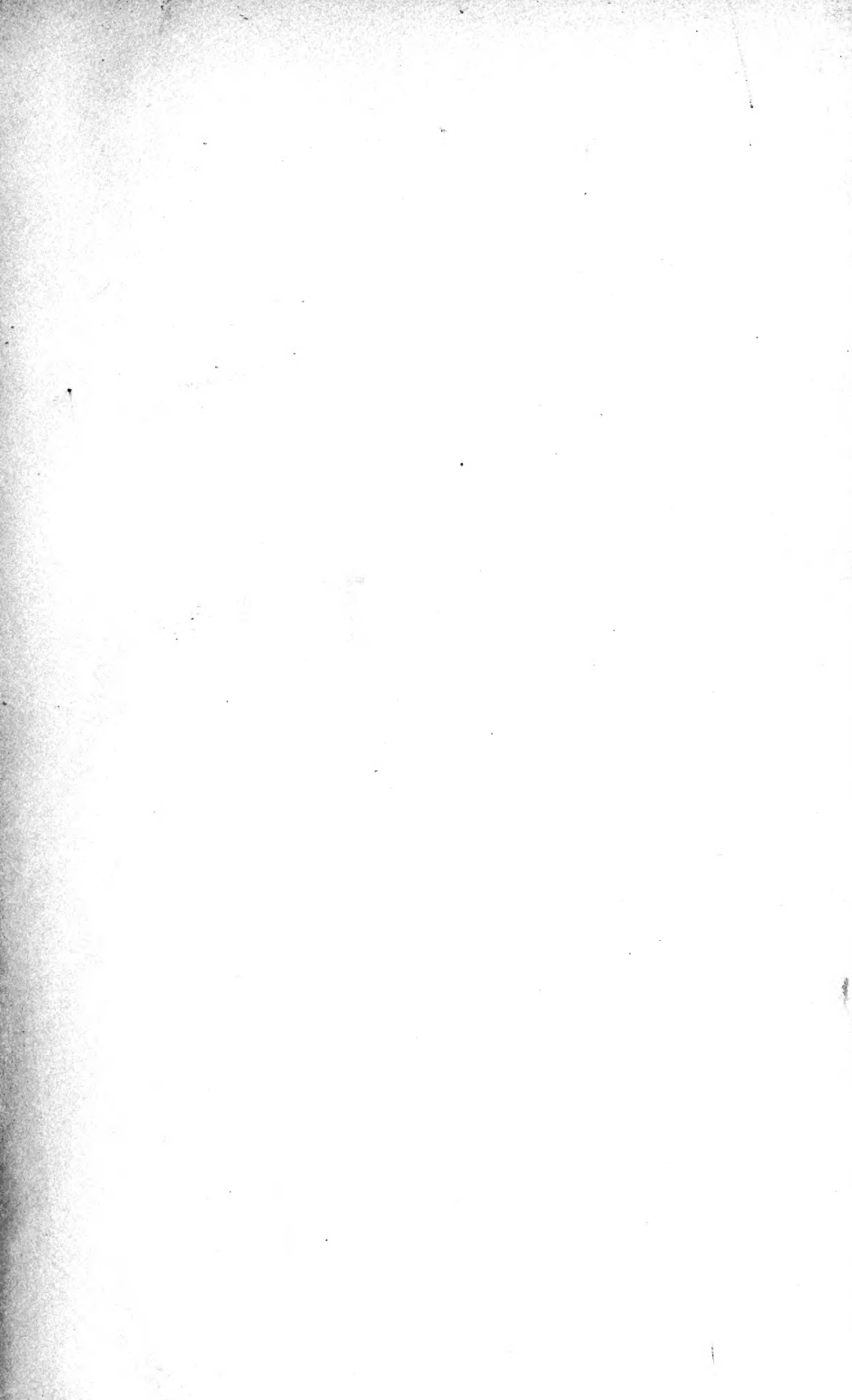


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FORMERLY
AMERICAN VETERINARY REVIEW

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Edited and Published for
THE AMERICAN VETERINARY MEDICAL ASSOCIATION

by

W. H. DALRYMPLE, BATON ROUGE, LA.

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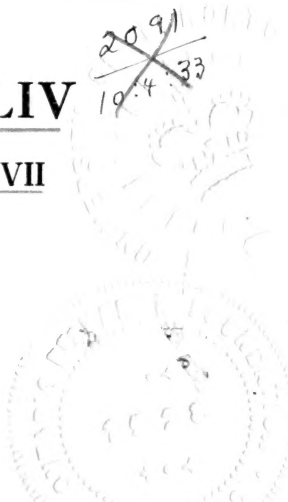
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VETERINARY MEDICAL ASSOCIATION MEETINGS

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list:

Name of Organization	Date of Next Meeting	Place of Meeting	Name and Address of Sec'y
Alabama Vet. Med. Ass'n.....	-----	Birmingham.....	C. A. Cary, Auburn
Alumni Ass'n College of Vet. Med. O. S. U.....	-----	Columbus.....	W. R. Hobbs, care O. S. U., Columbus, Ohio
Alumni Ass'n N. Y.-A. V. C.....	-----	338 E. 26th St.....	Jos. A. DeGroodt, Mendham, N. J.
Alumni Ass'n U. S. Coll. Vet. Surgeons.....	-----	Wash., D. C.....	-----
American V. M. Ass'n.....	-----	New Orleans.....	N. S. Mayo, 4753 Ravenswood Ave., Chicago
Arkansas Veterinary Ass'n.....	-----	-----	R. M. Gow, Little Rock
B. A. I. Vet. Ass'n of Iowa.....	-----	Ames, Ia.....	F. Jelen, Cedar Rapids, Ia.
B. A. I. Vet. In. A., S. Omaha.....	3d Mon. each mo.	S. Omaha, Neb.....	J. V. Giffie, So. Side, Omaha
British Columbia Vet. Ass'n.....	-----	-----	K. Chester
California State V. M. Ass'n.....	-----	-----	New Westminster, B. C.
Central Canada V. Ass'n.....	-----	-----	F. M. Hayes, Davis
Central N. Y. Vet. Med. Ass'n.....	June and Nov.	Syracuse.....	A. B. Wickware, Ottawa
Chicago Vet. Society.....	2d Tu. each mo.	Chicago.....	W. B. Switzer, Oswego
Colorado State V. M. Ass'n.....	-----	Denver.....	A. A. Leibold, Chicago
Conestoga Veterinary Club.....	2d Thu. each mo.	Lancaster, Pa.....	I. E. Newsom, Ft. Collins
Connecticut V. M. Ass'n.....	-----	-----	H. B. Brady, Sec'y
Dominion Vet. Meat Inspectors' Ass'n of Canada.....	3d Sat. each mo.	Toronto.....	A. T. Gilyard, Waterbury
Genesee Valley V. M. Ass'n.....	-----	Rochester.....	T. E. H. Fisher, Toronto
Georgia State V. M. A.....	-----	-----	J. H. Taylor, Henrietta, N. Y.
Hudson Valley V. M. A.....	-----	-----	P. F. Bahnsen, Americus
Idaho Ass'n Vet. graduates.....	-----	-----	W. H. Kelly, Albany
Illmo Vet. Med. Ass'n.....	-----	-----	C. V. Williams, Blackfoot
Illinois State V. M. Ass'n.....	-----	-----	L. B. Michael, Collinsville, Ill.
Indiana Veterinary Ass'n.....	-----	-----	L. A. Merillat, Chicago
Iowa Veterinary Ass'n.....	-----	Ames.....	G. H. Roberts, Indianapolis
Kansas State V. M. Ass'n.....	-----	-----	H. D. Bergman, Ames
Kentucky V. M. Ass'n.....	July 10, 11.....	Shelbyville.....	J. H. Burt, Manhattan
-----	-----	-----	D. E. Westmoreland, Owensboro
Keystone V. M. Ass'n.....	2d Tu. each mo.	Philadelphia.....	C. S. Rockwell
Louisiana State V. M. Ass'n.....	-----	-----	E. I. Smith, Baton Rouge
Maine Vet. Med. Ass'n.....	-----	Portland.....	E. E. Russell, Farmington
Massachusetts Vet. Ass'n.....	Monthly.....	Quincy House Boston.....	-----
Michigan State V. M. Ass'n.....	-----	-----	W. A. Ewalt, Mt. Clemens
Minnesota State V. M. Ass'n.....	-----	-----	G. Ed. Leech, Winona
Mississippi State V. M. Ass'n.....	-----	-----	J. A. Barger, Jackson
Missouri Valley V. Ass'n.....	-----	Kansas City, Mo.....	R. F. Bourne, Ft. Collins, Col.
Missouri Vet. Med. Ass'n.....	-----	-----	Chas. D. Folse, Kansas City
Montana State V. M. A.....	-----	-----	A. D. Knowles, Missoula
Nat'l Ass'n B.A.I. Veterinarians.....	Meet with A. V. M. A.....	-----	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Neb. Vet. Med. Ass'n.....	-----	-----	S. W. Alfort, Lincoln
Nevada State Vet. Association.....	-----	Reno.....	W. B. Earl, Reno, Nev.
New York S. V. M. Society.....	July 24-26.....	Ithaca, N. Y.....	C. E. Hayden, Ithaca
North Carolina V. M. Ass'n.....	-----	-----	J. P. Spoon, Burlington
North Dakota V. M. Ass'n.....	-----	-----	W. J. Mulroony, Havana
North-Western Ohio V. M. A.....	-----	-----	C. E. Hershey, Tiffin, O.
Ohio State V. M. Ass'n.....	-----	-----	R. I. Bernath, Wauseon
Ohio Tri-County Vet. Ass'n.....	-----	-----	Dr. W. R. Lukens, Hillsboro
Ohio Valley Vet. Med. Ass'n.....	-----	-----	C. S. Henry, Terre Haute
Oklahoma State V. M. Ass'n.....	-----	Oklahoma City.....	W. P. Shuler, Stillwater
Oregon Vet. Med. Ass'n.....	-----	-----	B. T. Simms, Corvallis, Ore.
Pennsylvania State V. M. A.....	-----	Harrisburg.....	T. E. Munce, Harrisburg
Portland Vet. Med. Ass'n.....	4h Tu. each mo.	Portland, Ore.....	Sam. B. Foster, Portland, Ore.
S. Carolina Ass'n of Veter'ns.....	Sept. 4, 5.....	Columbia, S. C.....	B. K. McInnes, Charleston
Schuykill Valley V. M. A.....	-----	Reading.....	C. R. Potteiger, Reading
South Dakota V. M. A.....	-----	-----	S. W. Allen, Watertown
So. Aux. of Cal. S. V. M. Ass'n.....	3d, Wed. Dec., Mar., June, Sept.	Los Angeles.....	J. A. Dell, Los Angeles
Southeastern Michigan V. M. Ass'n.....	2nd Wednesday Jan., Apr., Jul. Oct.	-----	-----
Southeastern States Vet. Med. Ass'n.....	-----	-----	H. Preston Hoskins, Detroit
Southern Tier V. M. A.....	-----	Birmingham, Ala.....	G. A. Roberts, W. Raleigh, N. C.
Southwestern Mich. Vet. Med. Ass'n.....	July 5.....	Binghamton.....	R. R. Birch, Ithaca, N. Y.
-----	-----	-----	L. A. Winter, Eau Claire, Mich.

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW
 (Original Official Organ U. S. Vet. Med. Ass'n)

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No. 1.

Editor's Note: Owing to the Journal equipment having to be moved from Ithaca, N. Y., to Baton Rouge, La., between the September and October issues, it is possible the latter may be a little delayed in delivery, and the number itself not quite up to the usual size and standard. However, we have tried to do the best possible under the rather trying circumstances, and we crave the indulgence of our readers for this time. W. H. D.

A WORD FROM THE NEW EDITOR.

In assuming the responsibility of the editorship and business management of The Journal, the writer does so with considerable trepidation. In taking up the cudgels just recently laid down by such a finished journalist as Dr. Fish, who has resigned to take a more active part in the service of his country, the writer has undertaken a responsibility that has given him very grave concern.

However, he has done so as a matter of duty at this trying time, and he very highly appreciates the compliment and honor, and the confidence reposed in him by the Association. He will

do his utmost to continue to merit that confidence—no man can do more.

The success of The Journal does not, however, depend upon the effort of one individual. The publication belongs to each member of the Association, and each has his individual responsibility in making it fully representative of our great veterinary organization.

We plead, therefore, for the heartiest co-operation of the entire membership, and the profession as a whole, in aiding us maintain the high standard our official organ has hitherto held under former able editors. The motto *Vis unita fortior* is extremely applicable in our case, and is as essential to the success of our publication as to that of any other line of endeavor; and if each one of us will adopt this motto and live up to it, our success will be assured. In fine, our Journal will be just what each member desires to make it. The new editor (one man) intends to do his best, which can not be a great deal, however, unless he receives the united support of the membership as a whole. Therefore, a generous response is asked for, and it is believed it will be forthcoming.

W. H. DALRYMPLE.

OUR LADIES' AUXILIARY RELIEF FUND COMMITTEE.

In a recent number of the Veterinary Journal (London) a very complimentary reference was made to our Ladies' Auxiliary Relief Fund Committee, but the editor expressed himself as not quite clear as to its function compared to some of the aids the ladies were rendering our British confreres over there.

As a matter of information to readers of the British journal, it may be stated that after the United States entered the world's war, the American Veterinary Medical Association, at its 54th annual meeting in Kansas City last year, took up a subscription on the spot, which reached a considerable sum, and appointed a Relief Committee to carry on this work. At the same time the ladies became interested, and in order to do what they could to assist, a Ladies' Auxiliary Committee was appointed to solicit subscriptions from the wives, daughters and sisters of not only the male members of the Association, but of those of the profession generally throughout the country. So that the Ladies'

Committee is, as the name implies, an aid, and a very important one, to the main Committee in raising funds for the purpose for which it was organized.

It may also be of interest to state that at the recent annual meeting of the A. V. M. A. at Philadelphia, the treasurer of the Relief Fund reported a total in hand of over \$5,000, the Fund now to be known as the Liautard Relief Fund, as a tribute to the memory of the late Dr. A. Liautard, who, we understand, originated the fund on the Continent; and also that the sum of \$2,500 was voted by the Association to be sent at once to the President, in France, of the Anglo-Franco-Belge Veterinary Relief Fund to help our suffering confreres in Europe, the amount to be presented by the ranking officer of the United States Army Veterinary Service in France at the time. We feel sure that the ladies of our Auxiliary will sincerely appreciate the fact that the Veterinary Journal has been pleased to compliment them on their beneficent work.

WHAT DO WE KNOW ABOUT VITAMINES?

In answer to our own question, we believe we may say that, as yet, not a great deal is known concerning these dietary essentials, collectively spoken of as vitamins. However, since 1912, when attention was first directed to them by Casimir Funk, nutrition experts have felt that they had something tangible to investigate, and that the investigation would probably result in the discovery of the cause, or causes, of what are classed in human medicine as "deficiency diseases," such, for example, as scurvy, rickets, beri-beri, and probably pellagra.

Vitamines seem to be supplied the body through the food intake, and some foods are much richer than others in these essentials. It would seem, also, that the preparation which certain human foods undergo destroys their vitamine value, which would account, in some measure, for nutrition-deficiency being more observed in the human being than in the lower creatures with which the veterinarian has to deal, although the subject is one which, doubtless, will have to be taken up by the animal dietician. Investigators seem to have discovered the presence of these vitamins in the form of a crystalline substance in all natural foods, and claim that they appear to be essential to the economy in stimulating the internal secretions which are physiologically nec-

essary to perfect assimilation and normal metabolism; also, that they can be divided into at least two types, both being soluble in water, but only one in fats, this difference in properties having led to their characterization, respectively, as fat-soluble and water-soluble vitamins. Without either kind in the diet, however, it is claimed that animal life, or, at least, that high in the genetic scale, is impossible.

The subject is a very interesting and important one, and a great deal of information concerning it may be obtained by a careful perusal of the excellent paper on Vitamins and Nutrition by our former editor, Dr. Fish, which appears in this number of the Journal.

"MISERY LOVES COMPANY."

Veterinary sanitarians are frequently heard to deplore the amount of negligence and indifference manifested by farmers and stockowners with reference to the proper disposal of their diseased carcasses, notwithstanding regulations governing such matters. This is perhaps more observable in sections of the country where anthrax infection is more or less prevalent. This state of affairs is not, however, confined to our own borders, but is found in other parts of the world.

In the latest annual report of the Veterinary Division of the Department of Agriculture, Union of South Africa, by the Acting Principal Veterinary Officer, we find, under the section on Anthrax, that that disease is responsible for more losses amongst stock than the rest of the contagious diseases combined, with the exception of East Coast Fever; and, judging from the number of outbreaks that have occurred within the Union, the disease is spreading rapidly and becoming a serious menace both to human and animal life. Loth as this officer is to say so, he is of the opinion that the spread of the infection is chiefly due to negligence on the part of the farmers and natives—more especially the latter, who will not bury a carcass intact if it can possibly be avoided; and this notwithstanding the wide dissemination of warnings and pamphlets on the disease among the farmers and natives, in the English, Dutch and native languages, but apparently with disappointing results, as the report states.

To sanitarians in some parts of our own Union, the above statements make rather familiar reading; and, while such condi-

tions in any part of the world are to be deplored in the universal fight against bacterial infections of a dangerous nature, we extend our sympathy to our friends down in South Africa, as some of us have passed and are passing through many similar experiences. In this connection, therefore, we may be pardoned for making use of the old adage, that "misery loves company."

THE INCREASED VALUE OF LIVE STOCK AND ITS INFLUENCE ON VETERINARY PRACTICE.

The following editorial from the current number of *Veterinary News* (London) contains so much of what we think is both timely and of general application, that we take the liberty of reproducing it as an editorial in this number of the Journal:

It will be generally admitted that the value of live stock of all kinds has increased enormously of late years. Increased value has the effect of greater attention being devoted to the prevention and treatment of diseases. Animals are now treated in a skilled manner, which in pre-war days would either be handed over to the tender mercies of the empiric or amateur, or left to perish as not being worth the expense of veterinary attendance. Anyone who has devoted attention to the subject will recognize the fact that the losses incidental to irrational and ignorant treatment were enormous. Although there is still much room for reformation, we must admit that the value of veterinary science is gradually being recognized by farmers and stockowners, with the result that the sphere of the veterinary surgeon's work has become greatly extended. In spite of patent medicines, empirics, popular veterinary literature, and popular veterinary lecturers, the qualified man is able to penetrate into hitherto unexplored districts and to earn a living. The stockowner, be he large or small, has learned the necessity for saving the lives of his animals. No doubt he regards the matter from a commercial aspect, and commences to see the folly of empiricism and the inimical effects of amateur treatment. He is utilizing the opportunities which are presented to him, and is aware of the losses incidental to calling in professional aid when an animal is almost moribund. The loss of even a calf, a lamb, or a pig is now regarded as a serious matter, while in former times it was taken for granted that a varying number of young animals should succumb yearly. The

result was that if anyone took the trouble to ascertain the sum total of the losses in any district, it would amount to a very large figure; but the matter was not deemed worthy of public attention. It required an outbreak of an epizootic disease to demonstrate the importance of veterinary science and preventive medicine. In the present instance the war has been the leading factor in bringing about the greatly increased value of live stock and the necessity for attention to veterinary science.

It is well to consider whether we as a profession have taken advantage of the opportunities presented to us for advancement, progress, and research. Are we educating our students with a view to render them, when qualified, of the greatest use and assistance possible to farmers and stockowners? It does not require a philosophical mind to discover the fact that the student who thinks he will gain all the information necessary for country practice from any veterinary college will be grievously disappointed. Yet we cannot ignore the necessity and importance of ensuring that young graduates should at least possess more knowledge than farm stewards as regards the care and management of young stock when suffering from common maladies.

The truth is that the necessity for teaching clinically in connection with the diseases of farm animals has not yet been fully recognized. It is assumed that the student will pick up such information as he goes along, and the fact that he will be brought into contact with experienced farm stewards when he is qualified is ignored.

The duty of the profession is clear as regards this matter. The requirements of the stockowner must be catered for, and more attention must be devoted to the diseases of young stock and their prevention. From the professional point of view, it is our duty to adopt every means to increase knowledge, to prevent disease, and to encourage research. We must show stockowners that we are specially interested in the prevention and treatment of disease, and will devote all our energies to overcome the many difficulties and to solve the numerous problems associated with the maladies of the animals of the farm.

Without doubt, if we devote attention to the subject, and overcome the apathy which formerly was so common in connection with what were regarded as animals of little value, we shall find a large increase in the opportunities for professional work. Further, we shall be enabled to curtail the large profits of the

patent medicine vendors, and to give quacks and empirics the *coup de grace*. One reason why these succeeded in flourishing was that in the "good old days" the veterinary profession devoted chief attention to valuable equine patients and did not trouble about the animals of the farm. The patent medicine vendor and the empiric seized the opportunity, and made it pay. It is now time that the reaction occurred, and we should adopt measures to clear our domain from the poachers and vermin which have so long gained a firm footing therein.

CHANGE OF DISTRICTS.

On account of the large number of members in District No. 2, the Executive Board has divided this district as follows: District No. 2 now includes the New England States, New York, Pennsylvania, New Jersey and Delaware, and District No. 3 now includes Ohio, Indiana, Michigan, Illinois and Wisconsin. Notices for nominations for candidates for members of the Executive Board will be sent out during September and a postal card vote for the election of members of the Board from these districts will follow as soon as possible.

The districts as now constituted are as follows:

District No. 1—Canada.

District No. 2—New England States, New York, Pennsylvania, New Jersey and Delaware.

District No. 3—Ohio, Indiana, Michigan, Illinois and Wisconsin.

District No. 4—Kentucky, West Virginia, Virginia, Maryland, District of Columbia, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida, Cuba and South America.

District No. 5—Alaska, Washington, Montana, North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Wyoming, Idaho, Oregon, Philippines and Hawaii.

District No. 6—California, Nevada, Utah, Colorado, Kansas, Missouri, Arkansas, Oklahoma, Louisiana, Texas, New Mexico, Arizona, Mexico and Central America.

N. S. M.

THE LIVE STOCK INDUSTRY, PRESENT AND PROSPECTIVE.*

JOHN J. FERGUSON, of Swift & Co., Chicago.

These notes are offered with a full sense of appreciation of the great service rendered by members of the veterinary profession to the industry at the various stages of production, transportation, manufacturing and distribution.

In the present status of our food supply situation, domestic and foreign, every discussion of live stock matters must be a Help-Win-the-War argument.

We must win the war—we will win the war—but to win it the American Army and Navy, and the fighting forces of our Allies and their civilian population, must have abundant supplies of nourishing food, of which meat must be the principal factor.

The basic appeal of our national Food Administration is More Meat and More Wheat. Given these two primary foods in ample supply of exportable quality, our fighting men can and will fight to sure and certain victory. The duty and burden of supplying the bulk of this necessary meat rests directly upon farmers and stockmen of America.

THE PRESENT LIVE STOCK SITUATION.

Since September 1, 1914, all old basic standards, prices and values have been swept away. Since then, the inexorable law of world-wide supply and demand has established an entirely new order of things in the production, marketing and distribution of live stock and their products.

The year 1917 saw the climax of these changed conditions. From our business operations we have compiled for your interest the following review of live stock production and prices for that year.

1917 was a year of abnormally high prices in general for all commodities and, although the prices of live stock and meats have not risen as much as those of other commodities, record prices have been the rule in the live stock market.

* Presented at the 55th annual meeting of the American Veterinary Medical Association, Philadelphia, August 19-22, 1918.

COMPARATIVE ADVANCES.

Dr. Charles R. Van Hise, President of the University of Wisconsin, an authoritative economist, had the following on January 11, 1918, in Vol. XLVII of Science, pages 1-10. A brief excerpt is as follows:

"Prices at about the middle of 1917, as compared with those three years earlier just before the outbreak of the war, for a number of the most important commodities, were roughly as follows:

Meat animals and meats, 25 to 75 per cent higher.
 Wheat and flour, two and one-fourth times as much.
 Corn and cornmeal, an increase of 80 per cent.
 Potatoes, an increase of about 60 per cent.
 Sugar, an increase of 75 per cent.
 Cotton and cotton yarns, an increase of 75 per cent.
 Wool and worsted, two and one-third fold.
 Bituminous coal, from two to three fold.
 Copper, about two and one-half fold.
 Pig lead, about three fold.
 Pig iron, about three and two-thirds times as much.
 Steel billets, more than five fold.
 Spelter, nearly double.
 Petroleum, an increase of about 75 per cent."

This exhibit interests all of us as consumers as evidence that war advances in prices of live stock and other products have not been unduly great proportionate to other staples.

LIVE STOCK PRICES 1917.

The highest prices paid for live stock in Chicago, 1917, together with dates, were as follows:

	Date 1917	Price per cwt.
Cattle.....	September 19.....	\$17.90
Hogs.....	August 21.....	20.00
Sheep.....	May 12.....	16.00
Lambs.....	May 17.....	20.60

These prices, however, were for choice lots that topped the market on the respective dates. The actual payments per hundred weight which we made at all plants for live stock for the fiscal years 1915, 1916 and 1917 were as follows:

	1915	1916	1917
Cattle.....	\$7.10	\$7.21	\$8.66
Hogs.....	7.09	8.49	12.89
Sheep and lambs.....	7.85	9.16	12.79

The rapid increase in prices is further brought out by the following statement, which shows our average prices paid in December, 1916, and December, 1917, and the percentage of increase:

	December 1916	December 1917	Per Cent Increase
Cattle.....	\$7.10	\$8.81	24.1
Hogs.....	9.78	16.67	70.3
Sheep.....	11.58	15.06	30.1
Average.....	8.69	11.70	34.8

1917 figures, issued by leading market papers, show that during the past ten years the price of native beef cattle has doubled; the price of hogs has increased two and one-half times, as shown from the following statement:

	Native Beef			
	Cattle	Sheep	Lambs	Hogs
1917.....	\$11.60	\$11.00	\$15.60	\$15.10
1907.....	5.80	5.25	7.05	6.10

The year was also marked by record receipts of cattle, which were the largest in the history of the country. When the 1916 marketings of cattle showed such an increase over previous years it was commonly believed that this was had at expense of stock and breeding cattle, but official figures indicate that the number of live cattle on farms in January, 1917, had increased in spite of the greater slaughterings of previous years.

BREEDING STOCK NOT SACRIFICED.

Official figures suggest the record-breaking marketings of 1917 were not made at the expense of breeding stock, but that in spite of popular opinion to the contrary there was an actual increase in the number of cattle on the farms. January, 1918, found more cattle on ranches, farms, and in feed lots than there were a year ago.

Receipts of hogs at central markets show a slight decrease compared with 1916. The need for hog products on the part of the Allies is urgent and should have primary attention. This necessity has already operated as a stimulant to increased production.

Receipts of cattle and hogs have continued to increase during the first six months of 1918.

	Receipts of Hogs at 10 Markets
1st 6 months 1918.....	14,468,443
1st 6 months 1917.....	13,543,926
Increase.....	6.8%

Receipts of Cattle at 10 Markets	
1st 6 months 1918.....	6,124,059
1st 6 months 1917.....	5,449,186
Increase.....	12.3%
Receipts of Sheep at 10 Markets	
1st 6 months 1918.....	4,662,660
1st 6 months 1917.....	4,928,007
Decrease.....	5.4%

It should also be noted that the average weight of hogs has been much greater during 1918 than during 1917. For example, average weight of hogs killed by Swift & Company at Chicago October 1, 1917, to June 1, 1918, was 15% greater than during the corresponding period of the previous year. Taking into account numbers of hogs received and average weight there has been an increase of nearly 25% in the total quantity of pork products available for consumption in 1918 as compared with 1917, which is a splendid answer from the country to the call of the United States Food Administration for more exportable meats.

While wholesale prices for meats have necessarily gone up with live stock prices, the increase has not been relatively as great. This saving to the consumer has been made possible through higher values and better utilization of by-products which result in better prices for live stock.

From 1915 to 1917 the wholesale price of meat has increased only 20.7%, whereas the price of live stock increased 39%.

LIVE STOCK RECEIPTS AND SUPPLY.

Receipts of cattle, hogs and sheep at nine principal markets for seven years—1911 to 1917, inclusive (years ending September 30)—were as follows:

Receipts of Cattle at Nine Principal Markets Years Ending September 30, 1911-1917	
Year	Number of Head
1911.....	9,416,374
1912.....	8,861,404
1913.....	9,108,500
1914.....	8,193,856
1915.....	8,464,185
1916.....	9,650,000
1917.....	12,278,000

Receipts of Hogs at Nine Principal
Markets Years Ending Sep-
tember 30, 1911-1917

Year	Number of Head
1911.....	19,217,508
1912.....	21,035,000
1913.....	19,997,000
1914.....	19,176,000
1915.....	21,366,000
1916.....	25,258,000
1917.....	25,049,000

Receipts of Sheep at Nine Principal
Markets Years Ending Sep-
tember 30, 1911-1917

Year	Number of Head
1911.....	13,530,000
1912.....	14,148,000
1913.....	14,148,000
1914.....	14,702,000
1915.....	11,994,000
1916.....	11,741,000
1917.....	11,415,000

The most important fact in these figures is a pronounced increase in receipts of cattle in 1917. Hogs show a slight decrease as compared with 1916—otherwise receipts of hogs were greater than for any previous year, and receipts of sheep show a continuous decline.

While it is true that live stock production has not increased in proportion to the increase of human population in this country, figures indicate that the live stock situation is not quite so serious as the public generally suppose.

We have good authority for believing that the number of cattle on farms in this country is greater today than ever before, in spite of the fact that the number sent to market for slaughter in 1917 was the greatest in our history.

The number of hogs has shown a slight decrease in 1917—both in the number on farms and the number sent to market. The short pig crop in 1917 is undoubtedly due to the high price of corn, which discouraged breeding, and the high price of hogs, which encouraged sale of breeding stock. Also, the unfavorable Spring of 1917 caused very heavy mortality among little pigs. In spite of the increase in 1917 being relatively less as compared with 1916, it should be remembered that production was greater than for any other previous year and that a new maximum will

undoubtedly be established in 1918. Hog production, although it has not quite kept pace with population, has shown a continuous actual increase. Sheep are the only important kind of live stock which have shown an actual, continuous production decrease.

PROSPECTS FOR LIVE STOCK INDUSTRY.

Every man in the live stock business would like a reliable prediction on future production and prices. Will supply and demand continue to operate in such a way that reasonable profits will be assured to the producer? On this matter, no one has any definite knowledge, but perhaps a survey of the situation may be of interest. For the duration of the war a wide and active market will probably obtain.

It is apparent that when the war ends, Europe will need quantities of American meats to feed her people. She will also require breeding stock to replenish her depleted flocks and herds. The demand from Europe for live stock products should continue good at fair prices.

Of the producing countries, Mexico has been rapidly exhausting her supply of meat-producing animals, pending the restoration of stable government. It will probably be long before Mexico becomes a considerable factor in the exportation of live stock.

Canada, suffering from an acute shortage of labor, has been reducing the number of cattle, sheep and hogs on her farms. Canada will not have much live stock, other than hogs, for export in the near future.

Australia and New Zealand are recovering from the effects of several seasons of scarcity of rainfall, which greatly depleted flocks and herds. Their production of sheep and mutton, which formed the basis of the world's supply, has been greatly reduced.

Live stock conditions are far from normal in South American producing countries. Money has been scarce in Brazil and Argentina, which, coupled with high prices for live stock, has checked increased production.

This survey indicates that producers need not fear overproduction of live stock in this country within several years.

It is reasonable to expect, when this war is over, there will be a world market at fair prices for whatever live stock they produce.

NEW CONDITIONS OFFER GREATER OPPORTUNITIES FOR CONSTRUCTIVE SERVICE IN THE VETERINARY PROFESSION.

It has long seemed to the writer as a business man that this Association, State and Local Veterinary Associations, and Veterinarians as individuals, may properly and productively undertake public service with a wider field and vision.

The American Veterinary Medical Association might well enlarge the scope of its activities along lines so successfully pursued by the United States Live Stock Sanitary Association by inviting the co-operation of national and state live stock organizations such as:

1. The American National Live Stock Association;
2. The National Wool Growers' Association;
3. National Pure-Bred Live Stock Record Associations;
4. State Live Stock Breeders' Associations;
5. Live Stock Traffic Departments of Trunk Line Railways;
6. American Meat Packers' Association, and other major organizations directly concerned in the live stock industry.

Better mutual understanding and co-operation could be established by inviting representatives of these organizations from time to time appear on the program of this Association so that if they had any grievance against the veterinary profession it might be ventilated freely. Suggestions for betterment of conditions affecting the industry might be exchanged.

This Association with its splendid resources might undertake a national campaign of education through live stock and farm papers dealing with control and eradication of—

Bovine Tuberculosis

Contagious Abortion

Tick Eradication (in state affected)

Control of Hog Cholera

Disposition of Diseased Carcasses on the Farm

Pollution of Wells, Ponds, and Streams

Construction of Sanitary Buildings, Yards, and Feed Lots

Sanitary Water Supply, and an infinite variety of subjects of varying importance. Information on these matters could be disseminated in the form of concise popular bulletins.

In addition, this Association might properly secure a place on the program at major live stock conventions for veterinarians with a record of accomplishment along specific lines. We know

such men would be welcome at live stock gatherings and their message widely spread through bulletins and reports published by such Associations.

State and district veterinary associations could bring their members into more friendly and profitable relation with breeders, feeders, and farmers in their respective states by devoting a period at their annual meeting to papers and addresses from successful stockmen and farmers within the state whose work in breeding, feeding and maintenance of healthy herds would be an incentive to others along similar lines. State associations could accomplish results by interesting themselves more directly in the work of the Veterinary Department of their State Agricultural College and Experiment Station, which we have found in many cases sadly in need of such support. Where such co-operation is welcome a committee of the state association could do productive work in supporting the State Veterinarian or State Live Stock Sanitary Board in working for sanitary conditions in live stock departments of state, district and county fairs. Civic service freely rendered is now the motto of all good citizens.

State associations would render valuable public service in securing state and municipal legislation providing for official supervision of abattoirs operating without U. S. government inspection. It is widely recognized that such places are clearing-houses for numbers of meat animals which probably could never escape condemnation at the hands of B. A. I. inspectors. Public health and welfare demand this matter shall receive constructive consideration.

THE VETERINARIAN IN CIVIC WELFARE.

The modern progressive veterinarian must be much more than a horse and cow doctor. In his intimate association with stockmen and farmers he can be a man of influence and example in his community. His service should not be confined to paid service. In most cases, the veterinarian as an intelligent reader of live stock and farm journals and a student of the science and practice of animal breeding, knows the advantages of using pure-bred sires with quality developed along specialized lines. The use of such sires means larger returns in a shorter time for feed and labor, better quality, higher prices and more profit for the finished product. The veterinarian should persistently talk live stock improvement through the use of specialized lines of breeding for specific lines of production.

He should drop a word in season regarding the desirability and reliability of the tuberculin test and the necessity for careful handling of all re-acting animals. Under average conditions the veterinarian sees little and hears less of tubercular animals on the farm. He could do much by suggestion to encourage cleaning up the herd and premises and so reduce preventable losses from this source.

By advocating the use of anti-hog cholera serum in healthy herds of swine the veterinarian would assist greatly in preventing outbreaks of cholera, which are still unnecessarily numerous and costly. In brief, the veterinarian should proceed more along the lines of preventive medicine than he has done in the past.

When visiting a farm professionally he can easily drop a few pertinent suggestions about improved sanitary conditions around the stables and barnyard. He can tell of the advantage of an all-year-round supply of sanitary drinking water, the saving possible through the use of concrete floors in stables, yards, and feed lots, the use of concrete water troughs, sanitary storage tanks and mangers. He can suggest how easy it would be to lay tile to drain the sink hole near the barnyard to the great advantage of both the human and animal population on the farm. He should be able to tell the farmer the advantage of a farm system of electric lighting, a pressure water system for residence, buildings, and feed lots, and the life-saving necessity for a sanitary sewage disposal system through the use of a septic tank. In brief, the veterinarian should know how to help farmers live safer, saner, cleaner, and better lives on the farm.

An unreasonably large number of market live stock reaching the packing house suffer from preventable disease, emaciation, or mechanical injury, resulting in enormously depreciated value in the meat product from these animals and material reduction in the national food supply. The practicing veterinarian by advice and suggestion can do much to remove the untoward factors involved which, in the aggregate, would mean immense salvage of exportable meats now so urgently needed.

CO-OPERATION IN LIVE STOCK IMPROVEMENT.

As an illustration of what the veterinarian can do in assisting live stock improvement, we have undertaken, as a demonstration experiment, to help grade up beef cattle in a certain county in the Central South.

We called on the State Veterinarian of that state for assistance. He has detailed five assistant State Veterinarians in that

county to locate farms on which we shall place pure-bred beef bulls. These local veterinarians will periodically inspect the animals and premises and advise with the farmers how best to feed and care for these bulls for profitable results. The mere announcement of this work has proved a great stimulus to live stock improvement over the entire state.

Commercial live stock interests recognize in the honest skilled graduate veterinarian a staunch friend and ally absolutely essential to the safe and permanent conduct of their business. Intimate daily contact with officials of the U. S. Bureau of Animal Industry, State Live Stock Sanitary Boards, and State Veterinarians has served only to increase our esteem and appreciation of the power for good in the intelligent veterinarian who sincerely devotes his life and effort to the betterment of this vitally important industry.

VITAMINES AND NUTRITION.*

PIERRE A. FISH, Ithaca, New York.

The importance of little things in science has grown as research has increased. Only thirty or forty years ago it was not uncommon to hear and read of the Germ Theory of Disease. It is now an obsolete expression, but we are still in the shadow as regards ultra-visible germs.

The animal organism is extremely sensitive to certain substances in minute quantities. A striking example is that furnished by the suprarenal glands. Their removal is attended with fatal results. The active constituent of these glands—adrenalin or epinephrin—is present, under normal conditions, only to the extent of one part in 100,000,000 parts of the blood, and yet this infinitesimal trace is essential to life.

Research has shown that life cannot be maintained on an absolutely pure mixture of protein, carbohydrate, fat and salts. Comparatively recent evidence has shown that, in order to maintain the organism in condition, a small quantity of something not heretofore recognized must be present in the food. A ration, however well balanced and however well organized as to its

* Read before the Veterinary Medical Association of New Jersey, semi-annual meeting, Asbury Park, New Jersey, July 12, 1918.

calorific or fuel value, is still deficient if this "something" is wanting.

Very many foods contain an exceedingly small but important amount of accessory substances, which have recently been shown to be essential for the growth, development and well being of the organism. When these substances are excluded from the food, the body suffers, and sooner or later becomes subject to various diseases. What these substances are and the role they play in the chemical changes of the body is the subject of considerable discussion and investigation. Various substances have been isolated whose presence in foods influences favorably the condition of the body and whose absence produces the opposite effect.

Among these substances or "accessory foods" are vitamins. The term vitamin was suggested by Casimir Funk in 1911. It is made up from the word *vita* (life) and *amine*, meaning an amine or chemical compound essential to life.

The disease known as beri-beri, a polyneuritis, was one of the first to be associated with the investigation of vitamins. This affection has been prevalent in those instances where the diet was exclusively or principally upon polished rice. It was found that a similar condition of polyneuritis with the same diet could be induced in pigeons and fowls and these forms served usefully for experimental purposes. If unpolished rice (with husk) was used the disease did not occur or if polished rice were fed and some of the husk or polishings later administered, health was maintained.

Funk has endeavored to isolate the substance (vitamin) which prevents beri-beri. From 100 kilograms of dry yeast, he prepared 1.6 grams of a crystalline substance, which if given in doses of 4-8 milligrams to neuritic pigeons effected a rapid cure in 2 or 3 hours.

Scurvy is another disease which occurs in man and certain higher animals when the diet does not contain fresh vegetables or fresh animal foods. Formerly epidemics of scurvy broke out on sailing vessels when the crew was forced to live for several months on such food as canned beef and dried cereals. During the siege of Paris in 1871 an epidemic of scurvy broke out in a portion of the population because of the lack of fresh food. This conception of the cause of scurvy is supported by the fact that a corresponding change of diet and especially the administration of fresh milk or lemon juice leads to a rapid recovery of most cases

affected by the disease. It is reasonable, therefore, to conclude that there exist in fresh food some substances which are essential for the prevention of scurvy and may be designated as anti-scurvy or anti-scorbutic substances. These substances, as already intimated, have no direct relation to the other known constituents such as proteins, carbohydrates, fats and salts.

From the practical point of view it is highly desirable to know something of the distribution of vitamins in the various natural foods. A quantitative method for estimating the vitamin-content of a given food unfortunately is not available at the present time. A relative estimate, however, is useful and this information is available in the following table as to antineuritic and anti-scorbutic properties:

ANTINEURITIC PROPERTIES		ANTISCORBUTIC PROPERTIES	
<i>Relatively Rich</i>	<i>Relatively Poor</i>	<i>Relatively Rich</i>	<i>Relatively Poor</i>
Brewers yeast	Sterilized milk	Fresh vegetables	Dried vegetables
Egg yolk	Sterilized meat	Fresh fruits	Dried fruits
Ox heart	Cabbage	Raw milk	Sterilized milk
Milk (fresh)	Turnips	Raw meat	Canned meat
Beef and other fresh meats	Carrots and other vegetables of this type	Cereals, sprouting	Dried cereals
Fish	Highly milled cereals		Pork fat
Beans	Starch		Starch
Peas	Molasses		Molasses
Oats	Corn syrup		Corn syrup
Barley			
Wheat			
Corn			
Other cereals			

It is an unfortunate fact that some of the foods richest in vitamins are more costly than those in which they are relatively poor. This is unfortunate especially in the large cities where in the poor districts at certain seasons, fresh eggs, fresh milk, beef, etc., are practically prohibitive financially. Much of the disease and malnutrition in these areas is doubtless due to the lack of these food accessories.

Although the presence in certain foods of unknown accessory food components has been pretty well established, it is a matter of considerable importance to determine their chemical nature and physiological action. Experiments have shown that the antiscorbutic and antineuritic substances could be extracted from certain foods by water. The antineuritic substances have also been found to be soluble in alcohol; as already mentioned in connection with yeast, this substance has been obtained in crystalline form, which yields on analysis, carbon, hydrogen, nitrogen

and oxygen. Although our knowledge of the chemical nature and physiological action of vitamins is still far from complete, a fact of fundamental importance is that they are fairly susceptible to temperatures above 100°C. (boiling temperature). Prolonged heating of most of the natural foods to a temperature of 120 degrees for one to three hours will destroy most of the physiological activity of the vitamins originally present in these foods.

On the physiological side, the evidence seems to indicate that without vitamins the food induces a toxic reaction more or less gradual in its effect; the best remedy for which is the antidotal action of the vitamins. The animal body is not capable of manufacturing the antidote or the known vitamins from vitamin-free food. (Antitoxins originate within the body; vitamins originate outside the body.) All of the higher animals, including man, receive their vitamin supply directly or indirectly from plants. It is the plant that synthesizes the vitamin and we obtain our necessary vitamin supply either by eating vegetable food or animal food. Cows store in their bodies the vitamins which they consume in their fodder; a portion of them is secreted with the milk, supplying the calf with the necessary vitamins, as well as furnishing a valuable source of vitamin for man. Chickens transfer part of the vitamin content of their cereal food into the eggs they lay. *It is the plant which keeps up the vitamin supply essential for animal life.* The wonderful synthetic power of plants is shown by their capacity of building up the vitamin from simple inorganic compounds. The fate of the vitamins in the animal body is not very well known. The body seems to have the capacity of holding fast to them for some little time. If a diet sufficient in vitamins is changed to one deficient or free of vitamin, it takes, as a rule, several weeks or even months before obvious and well-defined symptoms of deficiency diseases appear.

As already remarked, the animal organism is very sensitive to certain substances as exemplified by adrenalin, an animal product. Evidence seems to be growing that the animal organism is also very sensitive to a vegetable product, the vitamins and that we have, therefore, from vegetables sources, products which are just as essential for life and the well being of an animal as are the hormones or internal secretions.

With continued research, it is not impossible that vitamins may be isolated to such an extent that they may be used to sup-

plement a diet in which they are deficient, or utilized in a therapeutic way in deficiency diseases for curative purposes.

The effect of the war upon the health and food supply of a people may be sensed from the newspaper reports of conditions in the areas occupied by the Central Powers. Of specific conditions information is vague. With unbalanced, scanty rations with vitamine content ignored, deficiency diseases may be expected. Of these scurvy and beri-beri are best known, pellagra may be partially concerned and possibly rickets. Scurvy appeared in Glasgow and the English midland cities in 1916-17; when there was a scarcity of potatoes. Beri-beri was prevalent for a time during the siege of Kut when the white troops were on a ration of white flour. This disappeared when replaced by coarsely milled barley flour and Indian cereal grains. Scurvy broke out among the Indian troops in Mesopotamia as they did not eat the meat and horse flesh ration which protected the white troops from this disease. Substitution of fats deficient in the fat accessory for butter and diminution in the quantity of fat ration has caused outbreaks of xerophthalmia among children in the enemy countries and the increased amount of carbohydrates in the diet to make good the shortage in protein and fats has caused diminution in the growth of young children.

The health and food question is of vital importance to America as to other countries. The mistakes and experiences of others should be duly considered and profited by. It is not always necessary that the full picture of a deficiency disease should make its appearance. Such vague symptoms as loss of appetite and general weakness might very well, in some instances, be due to a deficient diet. It is quite possible that a number of indefinite complaints and symptoms of adults and children may be due to this cause and would be benefited by the administration of vitamins. The scientific and practical problems of stock raising will probably be very greatly benefited by researches on the effect of vitamins on the growth of animals and the composition and nutritive value of cow's milk. Efforts should be made to make use of certain industrial wastes rich in vitamins, such as brewer's yeast, rice polishings, etc.

It is an unfortunate coincidence that foods deficient in vitamins, which as a rule contain large amounts of, or are exclusively, carbohydrates, are cheap and abundant. The rising cost of foodstuffs induces the poorer classes, who cannot ration themselves intelligently, to ration themselves according to prices and

to unconsciously put themselves on a low plane of vitamin intake.

To the veterinarian the nutrition of animals is as important as the nutrition of the human to the physician. Although the domesticated animals are doubtless less susceptible than the human to so wide a range of deficiency diseases because of less interference with the natural ration in the way of cooking, etc., it is well to remember that a perfectly balanced ration of pure proximate principles or a ration properly constructed as to its calorific or fuel value is not sufficient to sustain life satisfactorily if the vitamin content is deficient. It has been reported that certain prepared foods have caused digestive disturbances. It is reasonable to infer that, as in human nutrition, vitamins must be considered. When research has advanced sufficiently it is not unlikely that it will be shown that dietetics play quite as important a part as therapeutics in safeguarding animal health.

It has been said that "Each country and each epoch has its own food problems." It is our duty to assist in the solution of them.

THE EXAMINATION OF THE EYE.*

R. R. BOLTON, Unadilla, New York.

The practicing veterinarian is often requested to make an examination of the eyes of animals, especially of horses, because the horse is peculiarly susceptible to and frequently afflicted with a contagio-infectious disease which is very insidious in its nature, and which appears to affect only the eyes. Injuries often occur to the eyes of the horse as well as to the eyes of other species, and these take on a peculiar course in the process of repair, due to the highly specialized structures involved. An injury to the eye or the deranged sight of an eye following injury or following affliction with the insidious disease before mentioned gives the animal a repulsive appearance and makes it intractable. The presence of the contagio-infectious disease known as periodic ophthalmia or moon-blindness constitutes an unsoundness. For one to be able to differentiate injury of the eye from periodic ophthalmia

* Read at the meeting of the Southwestern Tier Veterinary Medical Association, Binghamton, New York, July 5, 1918.

often requires a very thorough and careful examination of the entire structure of the eye.

Having a knowledge of the structure, anatomical relations, blood and nerve supply and physiological functions of the parts of the eye, an examination naturally divides itself into two parts, as follows:

- A. Examination of the exterior;
- B. Examination of the interior.

Examination of the exterior of the eye is done by two methods: I. Inspection, and II. Palpation.

I. Inspection consists in a scrutinizing examination of all those parts visible to the unaided eye and should be done in shaded daylight, not in direct sunlight. The eyes are observed in comparison with each other or with a pair of sound eyes and the following parts noted:

- (1) Prominence of the eyes. Are the two eyes of equal prominence? Is the prominence of the eyes normal?
- (2) The Palpebral Fissures. Are they equal in size, symmetrical and regular in contour?
- (3) The Eyelids. Are they symmetrical, faulty in form, position or movement?
- (4) The Eyelashes. With eyes open, the eyelashes of a pair of healthy eyes in the horse project nearly horizontally from the vertical plane of the side of the head. They incline very slightly downward from the horizontal. In a pair of healthy eyes the direction of the eyelashes are symmetrical with each other.
- (5) The Membrana Nictitans. Only the pigmented margin of the membrana nictitans can be seen at the internal canthus of the healthy eye. The margin of each should be regular, symmetrical and thin.
- (6) The Conjunctiva. The conjunctiva is inspected to determine the condition of the circulation in the eye. Two systems of blood vessels may be seen in the bulbar conjunctiva: the *conjunctival* and the *ciliary*. The *conjunctival* system consists of numerous irregular, fine tortuous vessels which anastomose frequently and which move with the mucosa when pressed aside on the bulb. In health the conjunctiva is pale pink and only a few fine pink vessels are seen. The *ciliary* system consists of larger vessels which ramify in straight lines over the eyeball from near the margin of the cornea and do not move on

the eyeball when pressure is exerted sidewise on the bulb. In eyes devoid of pigment there may be seen a narrow zone of white around the margin of the cornea, which is limited by a line of points on the sclerotic where the ciliary vessels perforate and traverse the sclerotic to the ciliary body. In conjunctivitis the conjunctival vessels are enlarged, numerous and tortuous and the conjunctiva is reddened and swollen. In iritis and inflammation of the ciliary body the ciliary vessels are enlarged and may be seen as red lines over the bulb accompanied with sensitiveness to pressure on the bulb.

- (7) **The Cornea.** The cornea is a smooth, transparent and glistening membrane with a uniform and regular convexity. In health no blood vessels can be seen.
- (8) **The Aqueous Humor.** The aqueous humor is a collection of lymph maintained within the eyeball between the posterior surface of the cornea and the anterior surface of the capsule of the lens. In health it is perfectly transparent.
- (9) **The Iris and Pupil.** To inspect the iris and pupil satisfactorily place the animal inside with his head near a window or an open door so that the light falls directly in his face. All openings admitting light to the rear of the animal should be closed so that when the observer stands in front of the animal looking at the eye no ray of light may interfere with his vision. In shaded daylight the healthy eye shows a black horizontal pupil bordered by the iris, the free margin of which is even and regularly oval in the horse and ox, while in the dog it is circular. In a pair of healthy eyes the pupils are symmetrical and equal in size. The iris is a pigmented muscular curtain, the muscle fibers of which are arranged circularly and diametrically. In strong light it should contract promptly, thus contracting the pupil, and expand as promptly in darkness, thus dilating the pupil. To examine, cover one eye with the hand so as to exclude the light, then cover the other eye for a minute or so and quickly withdraw. The pupil should be dilated when the hand is withdrawn and should promptly contract until proper accommodation is secured. Any failure to show these movements implies a lesion in the brain, optic

nerve or eye which impairs or paralyzes vision. The various causes of immobility of the iris are:

- (a) Permanence of the pupillary membrane which has remained from the fetal condition.
 - (b) Adhesion of the iris to the capsule of the lens (posterior synechia).
 - (c) Adhesion of the iris to the cornea (anterior synechia).
 - (d) Glaucoma, in which intraocular pressure determines dilation of the pupil.
 - (e) Iritis (inflammation and swelling of the iris). In this the pupil is narrowed.
 - (f) Lesions of the oculomotor nerve may paralyze the iris and fix the pupil.
- (10) The Corpora Nigra. These are especially prominent in the horse's eye and are smoothly rounded bodies, pigmented like the iris and attached to the horizontal margins of the iris from which they project outwardly. They are largest on the upper horizontal margin and may also be seen on the lower horizontal margin.

II. Palpation consists of feeling the eye with the hand or finger tips. The tension, sensitiveness and temperature of the eyeball are to be noted by this method of examination. Both eyes should be palpated simultaneously for comparison. To determine the tension and sensitiveness, the simplest and most practicable method is to place the index finger of each hand upon the upper lid of the eye and press inward upon the eyeball. All normal eyes have about the same tension, but a pair of healthy eyes have the same tension. A pair of eyes may differ in tension, depending upon whether one has been subjected to chronic disease and the other has been comparatively free from it. When sensitiveness is elicited on palpation of the eye, it is always indicative of an acute inflammatory condition within the globe. The temperature of the eye may be determined most easily by covering the eyeball with the palm of the hand. Increased temperature accompanies an acute inflammatory process.

Examination of the Interior of the Eye depends for the most part upon inspection and upon being able to look into the interior of the eyeball through its transparent media. There are three methods in use for such an examination as follows:

I. The Use of Mydriatics.

II. The Examination for Purkinje-Sanson Images.

III. The Use of the Ophthalmoscope.

I. *The Use of Mydriatics.* A mydriatic is any drug that when applied locally to the eye in the form of eyedrops (solution) possesses the physiological action of dilating the pupil through paralysis of the ciliary muscles and iris. During the action of the drug the power of accommodation is lost.

The use of a mydriatic is the first step preparatory to making an examination of the interior of the eye. If after the application of a mydriatic, dilation of the pupil cannot be obtained, we cannot proceed with any further examination of the interior of the eye, such as an examination for Purkinje-Sanson Images, or by the use of the Ophthalmoscope, because these methods of examination depend upon our being able to reflect and project rays of light into the fundus of the eye to illuminate it. Any examination of the interior of the eye attempted without first having secured paralysis of the iris and dilation of the pupil is unsatisfactory because the projection of light into an unprepared eye causes the iris to contract strongly and the pupil to close to a narrow opening so that structures back of the iris cannot be seen.

Observation of the action of a mydriatic drug upon the eye gives useful information as to the condition of certain structures within the eyeball. Dilation of the pupil may be prohibited by any one of the following:

- (a) Adhesions between the margins of the iris.
- (b) Adhesions between the iris and the capsule of the lens (posterior synechia).
- (c) Adhesion between iris and cornea (anterior synechia).
- (d) Infiltration and swelling of the iris.

The following drugs are mydriatics and are used as described:

(1) Atropine sulphate. This drug is in most common use as a mydriatic because it is most generally available and is most persistent in its action. The nitrate, salicylate, or borate, of atropine may be used.

For eye work atropine is usually employed in a 1% solution (atropine sulph. gr. 1, aqua dest. 3 ii). Fresh solutions should always be used. One or two drops are lodged in the pouch of the conjunctiva under the lower lid, whence it is absorbed through the cornea and into the aqueous humor to act directly upon the iris and ciliary body. In healthy eyes a full effect is obtained in one hour and often remains twenty-four hours. Accommodation re-

mains imperfect as long as eleven days. On diseased eyes a larger amount may be required and where adhesions of the iris (synechiæ) are present dilation of the pupil may be impossible.

To produce a maximum effect upon the iris, where it is desired to break down adhesions, ten drops of the atropine solution should be instilled into the eye, with an interval of five minutes between each drop. In this way the accumulated effect of all the drops is obtained. More than one drop can hardly be retained in the conjunctival sac at a time.

The use of cocaine (2% solution) along with the atropine insures a maximum dilation of the pupil. The best mydriatic prescription is the following, according to DeSchweinitz:

R Atropine sulph.....grs. iv
 Cocaine hydrochlor.....grs. viii
 Aqua. dest..... $\bar{3}$ i
 M. Sig. Use as eye drops.

A drop of the above solution into the eye once or twice daily will maintain a maximum dilation of the pupil in severe inflammations of the eye.

(2) Homatropin. This drug is weaker than atropine and the effect does not last as long. To use the drug properly it must be employed in 2% to 4% solutions, one drop of such solution being instilled into the conjunctival sac every 15 minutes for an hour and a half. The effect remains three days.

(3) Scopolamin. This drug is employed in $\frac{1}{2}\%$ solution. Two instillations of one drop each, 30 to 45 minutes apart, are sufficient. Dilation of the pupil is complete in 30 minutes after the second instillation. The effect remains five to six days.

(4) Cocaine hydrochloride. Cocaine is a mild mydriatic and is used in 2% to 4% solutions. It seems to be an excellent synergist to atropine, and in eye work is most commonly used in conjunction with atropine as in the prescription above. Cocaine causes contraction of the blood vessels of the iris.

II. *Examination by Purkinje-Sanson Images.* Examination for the Purkinje-Sanson images is made to determine the transparency of the cornea, aqueous humor, lens and lens capsule. The transparency of the lens and lens capsule constitutes the most important object of this procedure because it is the simplest and most practicable method of determining the existence of cataract.

In order to make the examination it is first necessary to instill into the eye a mydriatic and obtain complete paralysis of the iris and dilation of the pupil. Second, darkness or semi-darkness

and a candle light or any artificial light of low illuminating power which is freely movable must be available. The value of the examination is based on the following: If, in a darkened room a lighted candle is passed back and forth at a suitable distance (4 to 6 inches) in front of a healthy eye, the pupil of which has previously been dilated, and an observer looks into the eye obliquely, he will see within the pupil three images of the candle flame reflected, respectively, the first from the external surface of the cornea, the second from the anterior surface of the lens, and the third from the posterior surface of the lens. The image from the front of the cornea (first) is erect, bright and clearly defined; the image from the front of the lens (second) is still erect, slightly larger, and dimmer than the first, because the difference between the index of refraction of the aqueous humor and the lens is very slight; and the third, that from the back of the lens, is smaller, clearer and more distinct than the last (second), and is inverted, because the surface of reflection on the back of the lens acts as a concave mirror.

The first and second images are also seen to move in the same direction that the lighted candle moved, while the third image moves in an opposite direction.

Any unevenness or opacity at any point on the three reflecting surfaces will cause the image reflected from that point and also the images reflected from surfaces posterior to become blurred, diffused or obliterated, depending upon the intensity of the opacity. Thus, not the existence only, but the exact seat of an opacity is easily demonstrated.

Opacities of the cornea cause a blurring of the first image, and a diffusion or obliteration of the second and third images. Opacities in the aqueous or on the anterior surface of the lens blur, diffuse or obliterate only the second and third images. Finally, opacities in the body of the lens or on its posterior surface blur, diffuse or obliterate only the third image.

III. The Use of the Ophthalmoscope.

The Ophthalmoscope is used to determine the condition of the deeper structures, i. e., those structures posterior to the lens and iris.

This is only possible when the cornea, aqueous and lens are transparent and the pupil can be dilated. (Use of mydriatics.)

In a healthy eye no object back of the iris can be seen by an observer with his eye unaided, which is due to the fact that the background of the eye being examined is not illuminated.

Whenever we project rays of light into the background of an eye so as to illuminate it and are able to bring our line of vision in the same line with the projected rays of light, it is easy to see the background. This is best accomplished with an ophthalmoscope, which is a small, concave mirror having a hole in the center through which the observer looks, thus bringing his line of vision in the same line with the rays of light reflected from the mirror into the background of the eye and illuminating it.

In order to use the ophthalmoscope efficiently the pupil should first be dilated by the application of a mydriatic and the subject placed in a darkened room with a single flame of an oil lamp or candle or an electric light of low candle power. The light should be held stationary and in such a position that its rays may be reflected into the eye of the subject with ease to the observer. The ophthalmoscope is held close to the eye of the observer and at a distance of 10 to 20 inches from the subject's eye. In focusing a reflected light on the cornea and then on the pupil, lens or vitreous, any opacities in these will appear as grayish, cloudy reflections or a denser white, according to their degree of opacity. Opacities in the cornea or aqueous move in the same direction as the eye rolls, while opacities in the vitreous move in the direction opposite to the motions of the eye, so that by the aid of the ophthalmoscope it is not only possible to determine the presence of opacities in the transparent media of the eye but also to locate them with accuracy. Furthermore, an examination of the retinal circulation and of the optic papilla is possible.

—Dr. G. E. Golden, recently in charge of Hog Cholera work in Louisiana, has been transferred to similar work at Des Moines, Iowa.

—Dr. J. D. Townsend, of Mississippi, who has been doing tuberculosis eradication work in Louisiana, on the force of Dr. R. W. Tuck, has resigned to take up the breeding of pure-bred cattle near Shreveport, Louisiana.

—Dr. A. E. Eschenbacher has resigned his position on stock yards inspection work of the B. A. I., at New Orleans, Louisiana, and is now in private practice at Arabi, Louisiana. Much of the Doctor's time is occupied in tuberculin testing of dairy and breeding cattle coming into Louisiana.

PARSING THE VETERINARIAN. (PAST, PRESENT, AND FUTURE.)

T. P. WHITE.

Is there any one of us who fails to remember the mingled feelings of importance and anticipation running riot the day we received diplomas acknowledging to the world that having complied with prescribed studies, etc., of a certain seat of learning we were duly accredited veterinarians? And do you recollect the deep (and lasting?) impression made upon the graduating body through the remarks of those chosen to outline on that memorable day the duties devolving upon this exceptional class of graduates, to depict the grandeur of the noble profession we were entering, the wonderful future just unfolding to men as well fitted as we, and the bright career awaiting us in our chosen field of endeavors? As one of our cartoonists would put it: "Wasn't it a Grr-a-nn-d and Glo-o-ri-o-us feeling!"

Then came the rude awakening! A sordid and unsympathetic world refused to accept us at our worth unless we proved by deeds and not words that our services to a community were worthy of the confidence, trust, and remuneration solicited. Under such requirements how many of us proved to be a keen disappointment to the institution from which we came, to the professor whose special charge we had been and to the profession which had so generously taken us into its bosom, to say nothing of the disappointment to ourselves, verging on the point of belief that an error had been made in the selection of a mode of livelihood.

There is a saying that one's life and opportunities are largely what we make them. Granted this to be true in many cases, we must not fail to apply the well-known axiom that there are exceptions to all rules, and particularly in the case of the veterinarian. In the majority of instances the new graduate in veterinary medicine seeking a location wherein to practice his science has been more or less a victim of circumstances, oftentimes having been stalked by a ghost of the past, a specter of ill'omen, as it were, in the shape of an incompetent practitioner or quack who for years had foisted his presence and illiterate practices on the

community. True, the veterinary fledgling had been told, warned and admonished that his success would depend upon his ability to overcome obstacles and adversities, but somehow, when faced with the concrete problem it became a more serious task than when discussed in the lecture room. The newcomer in the field of practice who had the wisdom to choose a rich man for his father and whose equipment, food and laundry money came from the perennial source oftentimes weathered the storm and emerged from it all victorious to become later a substantial citizen. A few, very few, without money but endowed with unlimited confidence in themselves (a trait very essential in the makeup of all veterinarians) managed to hang on till some unlooked-for incident established their standing and ability to render efficient service. Today, however, we see the prejudice and suspicion toward the veterinarian disappear and it is pleasant to note that his presence and services are solicited by almost every community and he is hailed as a useful member of society.

The so-called veterinarians of the past, whose only legacy left to the succeeding generation is the opprobrious name of "horse doctor," thanks to a kind Providence, is fast becoming extinct. The age of checkered suits, the derby hat perched on one ear, and black cigars which in proper place were tilted at an angle of 45 degrees, is only a memory, and with the passing of public gambling at race tracks and questionable dealing in horse flesh the profession has been purged of griping obstructions to progress and the application of science. However, let us not overlook the fact that veterinarians of today are indebted to many students and leaders in veterinary problems who lived in that dark age but whose scruples and principles plus scientific thoughts and training have laid the foundation of veterinary science upon a sound basis. To those, as pioneers, our thanks are due and given with true sincerity.

The practicing veterinarian of the present is profiting in a large degree by the error or limitation of those of the past. He has learned the necessity of being trained and qualified to affiliate with the various interests common to a locality. His views are broader, his sympathies keener, joining and giving freely of his advice and help in any movement for the benefit and upbuilding of the community of which he is a part. He has progressed from a livery stable as official headquarters to a well-appointed office on one of the principal streets. We find him representing his neighbors in local councils. He is becoming identified with civic

improvement movements. He has a comfortable residence. His family moves in society. In short, he is (as well he should be) one of the progressive and leading citizens.

It becomes necessary to digress somewhat from the main theme to call special attention to a group of veterinarians which heretofore has figured but little, or in a limited way, in the councils, organizations and plans of the veterinary profession. Reference is made to the large number of these professional men in the employ of the Federal Government. In their sphere, as sanitarians, in the detection and destruction of disease-infected meats, in the eradication of infectious and contagious diseases of live stock in the field, and in the various phases of work to which they are assigned, they, without a doubt, render the greatest good to the general public of any servant in the employ of the country. For reasons over which they have no control this army of loyal and efficient veterinarians has been overlooked, their work as professionals even discounted in certain quarters. Figured in the amount of public protection afforded by the work of these officials of the Government, both in the safeguarding of human health and in the prevention of losses from animal diseases, their services are probably of more value than those of any other class of employees, not excepting the veterinarians of the Army. And yet the fact remains that considering the class of service rendered, the objectionable conditions under which they are compelled to labor (for manual labor is part of their duties) and long hours engaged they are the poorest paid class of employees on the pay roll of Uncle Sam. It is a matter of record that laymen, even women, are employed by the same Department at salaries much in excess of those paid these veterinarians, many of whom have served faithfully for a considerable number of years. This is no reason why the layman, or laywoman, should receive less, but additional reason why the veterinarian should receive more. Where the responsibility lies for this condition is not for the writer to know or say, but the fact that these employees are faithfully performing their tasks under the present rate of compensation is a lasting monument to their loyalty and frugality.

Coming back to the main topic and the parsing of the subject, the veterinarian of the future will necessarily be a sanitarian in addition to other qualifications. We are entering into a period of prophylaxis and the application of sanitary measures and formulæ in the prevention of diseases of animals as well as of the human family will be the chief factor in the protection of health. The graduate of the future must be trained as an educator as well as

practitioner. He must be qualified to address public gatherings; he must have knowledge of types of sanitary buildings and their construction, drainage system, etc. Animal husbandry will be required as part of his veterinaary training, and what is more useful than a knowledge of scientific agriculture to make him popular in a farming community? A public able to judge the value of science will demand a truer system of diagnosis of ailments which will require laboratory tests in many cases. Therefore, the practitioner of future years will need to be qualified and equipped to make such tests. As immunization will constitute a large part of treatment, it will be to his advantage to make his own bacterins and vaccines, especially those of an autogenous character.

This may seem like a fantastic figure I have described as a future veterinarian and some may think it too big a proportion to attain. Ours is a big profession, confined in the past within narrow limits. It must expand with the balance of world factors and as it appropriates its rightful functions in a sphere of science we must look to the individual member to assimilate the necessary knowledge to keep the veterinary problems and ethics abreast of other professions engaged and concerned in making this habitation of man a better place in which to dwell.

ORGANOTHERAPY AND THE CLASSIFICATION OF THERAPEUTIC TISSUE EXTRACTS.*

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Owing to the rapid and constantly growing interest in Organotherapy, or as it is sometimes called Opoththerapy, the time seems opportune to submit for discussion a brief review of some of the known facts demonstrating the need of more study and investigation, not only in the laboratory but by clinicians, with a view of clearing up some of the problems and obscurities connected with this therapy.

The need of further study is obvious when we realize that with few exceptions the therapeutic use of tissue extracts is more or less empirical and while the modern physician or veterinarian

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is inclined to sidestep anything savoring of empiricism, yet there is sufficient data available both experimental and clinical to justify him to increased use of these agents until such a time as through the media of research and laboratory investigation more definite information is acquired.

It is with this incentive in mind we are prompted to do our bit toward stimulating the study of this most interesting subject.

We are also prompted at this time to endeavor to arrange the various types of tissue extracts, and tentatively classify them in such a way that the clinician may become better acquainted with the physiological or chemical characteristics of these therapeutic agents and thus be guided as to their selection and the indications for their use.

The old, time-worn theory that the nervous system was entirely responsible for functional activity is rapidly being supplanted and the nerves are gradually being relieved of the various responsibilities that were formerly forced upon them. While it is not denied that the nerves do perform some mission in the control of metabolism, yet it is now definitely known that metabolistic changes are directly controlled by certain secretions, some of which have a direct influence upon the tissues in which they are formed and others which act indirectly as "Hormones"—that is to say, on tissues or organs far removed from their source.

In emphasizing this statement we believe we can best serve our purpose by quoting from Harrower's recent work on *Practical Hormone Therapy*, in which he lists a few of the known and unknown hormones, which probably constitute the active principle or principles of tissue extracts at present available.

"THE PRESENT LIST OF KNOWN AND UNKNOWN HORMONES."

"By 'Known hormones' are intimated those principles the presence of which is presumed because of definite action caused by the organ producing them; they are not necessarily capable of isolation or even of standardization.

The substances of known composition which may be regarded as playing the role of hormones are few in number—three or four at most—as follows:

The carbon dioxide formed in the tissues, particularly in muscle during contraction. It seems agreed now that the carbon dioxide acts as the normal stimulus to the respiratory centre. When produced in the working muscles in such quantities as to raise perceptibly the carbon dioxide tension in the alveoli of the lungs and the blood of the pulmonary veins, the respiratory centre is excited to greater activity, and the excess above the normal contents is thereby removed.

The adrenalin of the adrenal glands, which in some way, directly or indirectly, makes possible the full functional activity of the involuntary musculature of the body.

The hydrochloric acid produced in the stomach, which stimulates the formation of secretion in the duodenal epithelium.

Possibly the iodothyron of the thyroid gland with its dynamogenic effect upon the neuromuscular apparatus of the body.

In addition, there are a number of hormones of unknown composition which have been either proved or assumed to exist, and which are held responsible for certain well-known correlations of function.

The pancreatic secretin formed in the epithelium of the duodenum or jejunum, which stimulates the flow of pancreatic secretion.

The gastric secretin formed in the pyloric mucous membrane, which gives rise to the chemical secretion of gastric juice.

A secretin formed in the duodenal epithelium, which stimulates the formation of intestinal juice in the following segments of the intestine.

Unknown hormones of pancreatic origin, which determine the absorption activity of the intestinal epithelium.

Vaso-dilator hormones formed in tissues in functional activity, and which have a specific effect upon the vessels of the functioning organ.

A vaso-constricting and diuretic hormone formed in the posterior lobe of the pituitary body.

A hormone controlling the growth of the bones and connective tissues produced in the anterior lobe of the pituitary body.

A hormone controlling the oxidation of sugar in the body and produced in the cells of the islands of Langerhans in the pancreas.

A hormone produced in the thymus, which controls possibly in some way the development of the reproductive organs.

A vaso-constricting hormone formed in the kidneys.

A hormone in the salivary glands, which controls the flow of water from the blood-capillaries in the glands.

A hormone produced in the fœtus in utero, which stimulates growth of the mammary glands.

A hormone in the ovary, which controls the growth of the uterus and the processes of menstruation.

A hormone in the ovary, which controls the implantation of the fertilized ovum and the growth of placental tissue.

A hormone in the testis, which initiates the development of the secondary sexual characteristics in the male.

Hormones of an indefinite number, produced in all the tissues and acting specifically upon the determinants in the gametes in such a way as to make possible the transmission of acquired characteristics.' "

From the above data it is apparently well established that the various functions of the body depend largely, if not entirely,

upon certain substances or secretions, some stimulating and some inhibitory in character, whose sources are the so-called ductless glands or other tissues. It has been found upon study that some of these secretions are stimulating in character-producing or activating ferments, while others are inhibitory-producing or activating anti-ferments, one type serving to control the other within normal limits. In other words, one secretion furnishes the motive power which drives functional machinery, while the other type acts as a governor.

It is obvious therefore that a certain balance of these secretions must be maintained or else the normal metabolic order of things is upset and pathological changes result.

If this be true, it should be the duty of every physician and veterinarian to aim to recognize a disorganized balance and to endeavor to correct same by the judicious administration of a tissue extract containing as its active principle a hormone that will restore and subsequently maintain the normal equilibrium so essential to proper cellular function.

In the use of tissue extracts, however, it is suggested that great care be observed by the clinician, particularly in selection, as the constant use of some types of tissue extracts has a tendency to promote a lack of tone or a condition of laziness in the tissues or cells receiving artificial support.

From a therapeutic standpoint let the use of cod liver oil be used to illustrate the practical benefit of hormone therapy. It is a well-known fact that cod liver oil is markedly efficient in the treatment of various pathological conditions, more especially tuberculosis and diseases of a similar type. A study of the reason for the therapeutic effect of cod liver oil reveals the fact that its benefits cannot be ascribed to its fat content, which is no more useful than fats from other sources, but its therapeutic value is undoubtedly proven to be vested in certain liver secretions of the liver of the cod which are contained in the oil.

In fact, actual clinical experiments have demonstrated that when certain substances lecithide and hormone in character are isolated from cod liver oil, upon administration the same physiological benefits are derived as when the whole oil is used.

By tissue extracts are meant extracts or solutions of the non-protein, soluble digestion products of normal tissues or organs, which if properly prepared produce definite anatomical changes or physiological changes or both in like organs or as hormones in organs of another fixed group.

The tissues or organs which serve as sources of these extracts may, with the active principles which they furnish, be divided into two main groups: *First*, those organs or tissues containing an active principle with a chemically firmly fixed atomic balance, which makes it extremely difficult to upset the relations of the elements within the molecule by physical means such as heat; *Second*, others whose active principle or principles are chemically more loosely bound and hence more active. These substances are so constructed that certain physical influences, notably the application of heat, alter the internal relations of their elements, upsetting the balance otherwise maintained by molecular attraction and permitting of rearrangement. Under these conditions there results a substance whose physiological characteristics have been lost, even though it be chemically identical with the substance from which it arose.

The first group—namely, those unaffected by heat—are chemical entities, which may be separated from the surrounding organic material and crystallized, and which have an action closely allied to the action of certain drugs, particularly the alkaloids. Under this head should be placed epinephrin, thyroidin, and tethelin. The administration of these substances are followed by functional changes only. Members of this group are highly toxic in character and when given continuously or in single large dose are extremely poisonous and may even cause death.

To the second group belong a class of substances whose use can in no way be compared with the use of drugs but which produce changes more nearly paralleling normal physiological processes, stimulating not only functional activity of a limited number of cells, but also cell reproduction, with a resulting increase in the number as well as the activity of the cells involved. Unlike the first-mentioned class of tissue extracts, they are not toxic and even when administered to normal individuals in large doses have no deleterious effects. To this class of extracts belong Leucocytic Extract, Lymph Gland Extract, Ovine Lymphoid Tissue Extract, Spleen Extract, Ovarian Extract and Testicular Extract, etc.

The characteristics and therapeutic application of extracts of thyroid, pituitary and adrenal glands are well known and these products are extensively used by a majority of practicing physicians and veterinarians today.

Much work has already been done in the study of group two, but there are undoubtedly many organs and tissues not yet

worked upon which contain substances of this class. It is highly probable that such organs as the thyroid, pituitary and adrenal glands contain, aside from the principles of known therapeutic value, members of this chemically unstable group, which are destroyed in the preparation of the more stable compounds.

It is reasonable, therefore, and logical, to assume that the drastic methods resorted to in obtaining certain extractible substances from tissues, such as boiling or chemical treatment and subsequent refinement may, and as we propose to show do, deprive the finished products of many of their virtues.

In evidence of the fact that excessive heat is somewhat detrimental even to the more stable types of substances such as epinephrin the following set of experiments may be cited:

A number of bovine suprarenal capsules free from fat and surrounding foreign tissues were finely ground and the mass diluted with four times its weight of $\frac{N}{50}$ HCl, heated at 58°C for

one-half hour, iced for sixteen hours, incubated for eight hours at 37°C and finally filtered through paper. The filtrate was divided into two parts, the first remaining untreated, the second being boiled exactly two minutes, after which it was quickly cooled and filtered.

The two solutions were then tested in graduate doses, ranging from 2 cc to 0.2 cc per Kilo on rabbits for their ability to produce glycosuria, which test is a fairly accurate measure of the potency of the extract, the physiological activity of which is inversely proportional to the dose and the length of time between its administration and the appearance of sugar, and directly proportional to the quantity of sugar excreted, all other factors being equal. The most active extract is, therefore, that extract which when given subcutaneously produces the most marked glycosuria with the smallest dose in the shortest time.

In the entire series of experiments the extract which was not boiled produced the most marked glycosuria in the shortest time and with the smallest doses. The boiled extract in the maximum dose caused the excretion of about 0.7% of sugar excreted by an animal receiving the same dose of the unboiled portion in triple the time. The boiled extract is, therefore, less than 1/300 part as active as that made by the same process but at no time heated above 60°C.

Similar tests repeated at weekly intervals show that the extract which was boiled loses its power to produce a glycosuria

after two weeks, while the unboiled extract remains active after a year.

To summarize, then, the rationale of treatment with these substances which may be prepared by a proper digestion process, avoiding excessive heat is obvious when one considers the fact that their mission is to revitalize cells which have lost their normal vigor and are unable to produce their share of the substances necessary for normal metabolism and are hence either themselves the cause of the pathological condition or are directly responsible for the lowered resistance of the individual which has made infection or toxemia possible.

In the case of tissue extracts of group one, we simply administer substances which are the products of cell activity, and which are necessary to the normal well-being of the individual, but which have no permanent effect and must, therefore, be given continuously in order to maintain the condition desired. On the contrary, with extracts of group two we are using a substance which brings to the cells a product which enables them to regain their lost balance and to resume their normal physiological functions.

HEMORRHAGIC SEPTICEMIA, ITS CLINICAL DIAGNOSIS.*

DR. H. JENSEN.

The clinical diagnosis of this disease is many times exceedingly difficult and can be arrived at conclusively only by a laboratory confirmation, which may necessitate the use of experimental animal inoculation. Hemorrhagic Septicemia, an infectious disease, attended with a high mortality, attacks various species of animals, especially Cattle, Sheep and Swine. Young animals are more susceptible to the disease than older ones and those that are thin and poorly nourished are most liable to be affected.

The disease is a pure septicemia or blood poisoning, and for this reason often runs a short course and the affected animals die suddenly. The sudden death and the high mortality, both of which are present in the beginning of the outbreak, are more or less confusing with Anthrax.

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In Hogs, the disease is known as "Swine Plague," but I wish to state at this point that the true Swine Plague, which is caused by the organism *Suiscepticus* alone, is very rarely encountered in the field, but instead a disease which is commonly called Swine Plague but which is a mixed infection of swine. In swine this disease may become chronic and in such cases the affected animals gradually become weaker and thinner and may linger for several weeks before death.

Fowl Cholera represents the avian form of Hemorrhagic Septicemia and its attacks sometimes cause great losses; pigeons and geese are susceptible to Hemorrhagic Septicemia and usually results in death so quickly at the beginning of the outbreak that no forms of treatment have time to become effective.

PECTORAL, OR PULMONARY, FORM.

SYMPTOMS. The period of incubation in natural infections is probably, in the majority of cases, from 6 hours to 8 days. At first there is a rapid rise in body temperature to over 104°F., accompanied by a quickened pulse, dullness, rough coat and muscular tremblings. The most characteristic symptoms observed in this form of the disease are acute pleuro-pneumonia, the animal standing immovable with arched back, a dry, painful cough and a colorless or reddish foamy discharge from the nose. One or both sides of the thorax may show a dullness over different areas with bronchial breathing and vesicular rales, or there may be a total absence of respiratory sound. The respiration is greatly accelerated and labored, rumination ceases, peristalsis of the rumen and intestines is frequently suppressed. Constipation is followed by bloody diarrhœa, after which the weakened animal rapidly succumbs.

ANATOMICAL CHANGES. In the pectoral form of this disease the lungs will be dark in color and much thickened, with collections of blood serum in the meshes of the lung tissue, or they may be consolidated. The diaphragm, heart sac and heart will show numerous point and large hemorrhages. Occasionally we will find in conjunction with this form of the disease a hemorrhagic condition of the large and small intestines. On section of affected portions of the lung we often find areas of red and gray hepatization, having the marbled appearance seen in contagious pleuro-pneumonia and when squeezed exudes a yellow serum.

SUBCUTANEOUS FORM.

SYMPTOMS. In this form of the disease we have some cases where the surface of the body feels alternately hot and cold while the muzzle is cold and dry. There is also cessation of the appetite, rumination and milk secretion, providing that the animal lives a sufficient period of time after infection to manifest the latter named symptom. Swellings will appear beneath the skin of the head, throat or dewlap. These enlargements are somewhat soft and pit on pressure. The tongue is often swollen and the animal drools and slobbers because of the irritation to its tongue and throat. Examination of the nostrils often reveals the presence of many small hemorrhages just beneath the lining membrane, the eyes become swollen, highly inflamed and as a result tears flow down the cheek. Swellings of the legs or inflammatory enlargements of the different joints may be observed. The skin over the swollen parts of the body is very tense, warm and sensitive, respiration is difficult and the animal breathes heavily, especially when the enlarged swellings occur in the vicinity of the throat. Due to this swelling some animals die of asphyxiation.

ANATOMICAL CHANGES. The characteristic lesions found in this form of the disease vary in the different individuals. All cases show some hemorrhagic areas in the subcutaneous tissue, though the number and size of these vary greatly. Some animals exhibit very few, while others, on removing the skin, present hemorrhagic areas or petechiæ in large numbers and so extensive that a large fraction, possibly one-eighth, of the body surface appears to be involved. The large hemorrhages in the subcutaneous tissue appear to be of the composite type, which in some instances measure a number of centimeters in diameter, while in others a number of minute hemorrhages are placed closely together and may become partially coalesced. The subcutaneous swellings show the infiltration of a sero-fibrinous exudate which is usually yellow in color but has been found to vary from this to a dark red. Gas does not appear in the subcutaneous tissue of animals dead of this disease except in those cases where extensive postmortem changes have taken place. The blood vessels of the subcutaneous connective tissue, in the acute cases, show an extensive engorgement, but in those cases where the animals have lived until emaciation has taken place there is no engorgement of the blood vessels. The location of the superficial lesions varies in different animals. In most cases the parts about the shoulder are most affected, although a

few animals show marked lesions in the gluteal and inguinal muscles. At first sight the muscle tissue in some cases appears to be much involved, while on a closer examination it usually shows that some of the minute hemorrhages are in the muscle proper but that the larger are in the inter-muscular connective tissue. They are usually accompanied by a considerable quantity of yellowish or blood-stained serous exudate.

The lymphatic glands are frequently, though not uniformly, enlarged. Those that are enlarged are cedematous or hemorrhagic. The cervical and pre-scapular glands are most seriously affected.

CUTANEOUS FORM.

SYMPTOMS. The cutaneous form of this disease, which was at first called "Mad Itch," is quite rare and apparently has never been seen in some sections. This usually manifests itself by the animal rubbing, showing intense itching and nervousness. This itching is of such an intense character that large areas of skin will be entirely devoid of hair and rubbed to a raw sore.

In all instances in which this disease occurs the fence posts, trees or any other objects which are accessible are covered with hair and blood as high up as the animal is able to reach. These animals usually die in from 12 to 72 hours. In this excitable stage many times it is difficult to differentiate this disease from Rabies or cerebral conditions, but upon blood examination typical bi-polar staining organisms will be found present.

ANATOMICAL CHANGES. In a great many instances the typical diagnostic anatomical changes in this form of the disease are wanting, but usually there is found small petechial hemorrhages to be present in the subcutaneous tissues. The heart, which is quite constant, shows petechial hemorrhages both in the muscle and in the fat about the base of the heart. There will also be found these same petechial hemorrhages scattered over the auricles, but for some unaccountable reason we do not get the hemorrhages over the ventricles towards the apex, as is found in many instances in other forms of this disease.

In examining the central nervous system it will be found that hemorrhages occur in the coverings of the brain and of the spinal cord and also that the spinal fluid will be of a more or less red tinge, showing that there have been pathological changes taking place in these centers.

ENTERIC FORM.

SYMPTOMS. There exists at times the intestinal form in which changes are chiefly found in the abdominal cavity. This form of the disease may appear after it has already developed in the lungs. The intestinal form is usually accompanied with symptoms of colic and with much straining. Instead of the usual dry, dark brown feces, a mushy and finally a thin fetid fluid, which is frequently mixed with fibrin and mucous flakes, as well as with blood, will be found, although there are many instances in which the feces will be apparently normal from the standpoint of consistency and color, but will show a small amount of blood streaks; where, on the other hand, the mucous membrane of the intestine may be so badly inflamed that large portions of it will be expelled together with the feces, and the contents of the bowels in this condition may have the appearance of pure blood. The animals lose flesh very rapidly, the abdomen becomes tucked up and the eyes are quickly sunken; a staggering gait caused by the weakness of the patient is often noticed.

The intestinal form of this disease is very rarely encountered in certain sections. In most cases the animals show severe involvement of the lungs and the symptoms of croupous pneumonia.

ANATOMICAL CHANGES. The characteristic lesions of this form of the disease are generally most pronounced in the digestive tract. The stomach together with the large and small intestines will show hemorrhages both on the mucous and serous coverings. In some instances there will be found hemorrhages in the submucous tissues of both the large and small intestines, and cases have been reported in which the hemorrhages apparently extended from the surface of the serous coat to the inner surface of the mucous membrane. In the very severe forms of this disease, and especially those which have lingered over a great period of time, the intestinal wall will be found, for quite some distance, to be almost entirely devoid of the mucous lining. The contents of the intestines is usually thin or water-like and fetid. In many instances clots of blood will be found mixed with this fluid contents, while, on the other hand, in the very acute form of the disease, the intestinal contents will be approximately normal from the standpoint of consistency, but may be very dark in color, due usually to the decomposition of the extravasated blood.

Hemorrhages will be found in the mesentery and also the peritoneal lining of the abdominal cavity. The lymphatic glands

are usually highly congested or may also be hemorrhagic. The gastric surface of the diaphragm, in some instances, shows petechial hemorrhages, although they are not constant. The kidneys are very seldom affected, but when changes in the kidneys have taken place they usually consist of pinpoint hemorrhages and are mostly confined to the cortical surface, though a few are found in the walls of the pelvis and the uterus.

A disease has been described under the name of "Septic Pleuro-pneumonia of calves" which is a form of Hemorrhagic Septicemia and caused by the *Bacillus bipolaris vitulisepticus*. The symptoms shown by the affected calves are quite characteristic of Hemorrhagic Septicemia and the postmortem findings are also those found in that disease.

HEMORRHAGIC SEPTICEMIA OF SHEEP.

SYMPTOMS. In Sheep, young animals which have just been weaned are more susceptible, the disease manifesting itself in an acute form. There is a high temperature, muscular tremblings, discharge from the eyes and nose and colicky pains. The duration of the disease is usually very short, although it may become a chronic infection of the lungs with gradual emaciation of the animal. Sometimes the joints are involved, swelling of the knee joints being noticed in some cases.

The duration of the disease is usually about that of Cattle, viz., from 6 hours to 8 days, a high temperature is manifest, quickened pulse and dullness. The disease usually manifests itself in a more purely septicemic form than it does in the other animals.

ANATOMICAL CHANGES. In many instances the disease is of such an acute nature and the animals die so suddenly that the postmortem findings are wanting, but the changes which are usually present are petechial hemorrhages of the heart, lungs and spleen. The consolidation of the lungs may be encountered, but it is not a constant factor. The lymph glands will be highly congested and in many instances hemorrhagic, especially those in the cervical region.

HEMORRHAGIC SEPTICEMIA OF SWINE.

SYMPTOMS. In Swine, the disease sometimes manifests itself in a peracute form with the symptoms of general septicemia. Red spots may be noted on various parts of the body, especially around the ears and on the neck and rump. When affected with

this form of the disease the animal usually dies within a few hours after the first symptoms appear. In acute Swine Plague the disease usually occurs as a necrotic pleuro-pneumonia. There is labored inspiration, dry, spasmodic cough, slimy discharge from the nose and sometimes a pure conjunctivitis, cyanotic membranes, constipation, followed by diarrhœa and the feces sometimes containing blood. In the acute form the animals usually become emaciated and die in from 1 to 2 weeks. Sometimes the acute form develops into the chronic type, in which case the acute symptoms subside and the cough and pulmonary involvement continue for some length of time. Progressive emaciation occurs and a chronic inflammation of the joints may develop, resulting in the animal's death in from 3 to 6 weeks' time from exhaustion.

ANATOMICAL CHANGES. The most constant lesions which are present are the small petechial hemorrhages found scattered over the surface of the lung, the heart, pleura, diaphragm and lymph glands of the various parts of the body. The lymph glands which usually show the more pronounced changes are those of the cervical region together with the mediastinal glands. There are usually hemorrhagic areas present in the lungs; in some instances the entire lobe may be involved. On section these diseased portions may show either red or gray hepatization and in many instances large pockets of pus. The bronchi are filled with mucous exudate which is very stringy in consistency.

The contents of the intestines may be approximately normal in consistency but show small quantities of blood. The mucous membrane in this form of the disease is somewhat thickened and hemorrhagic. In a great many instances there will be found ulcers which have penetrated through the mucous membrane down into the walls of the intestine, to the submucous tissues. The spleen is usually normal in size and consistency but will show some hemorrhages on its surface. In some instances it has been found that typical petechial hemorrhages appear in the kidneys, which will cause great confusion between this disease and that of Hog Cholera.

DIFFERENTIAL DIAGNOSIS.

IN CATTLE. Because of the acute course, high fever and rapid termination in death from this disease in this species of animals, some difficulty may be experienced in distinguishing Anthrax, Blackleg, Malignant Edema and Rabies, from Hemorrhagic Sep-

ticemia. The œdematous swelling of the throat or neck may be present in both Anthrax and Hemorrhagic Septicemia, but the examination of the spleen will usually determine the cause of death, due to the fact that the spleen is usually normal in animals dead of Hemorrhagic Septicemia, and enlarged and softened spleen pulp in animals dead of Anthrax.

Blackleg and Malignant Œdema may be detected usually by the formation of gas within the swellings upon the body and the bubbles thus developed will produce a crackling sound under pressure. This gas formation is wanting in the swellings of Hemorrhagic Septicemia, providing the animal has not been dead for a long period of time before autopsy and decomposition have taken place. There is also another factor in Blackleg which is very characteristic: discolored muscle and the typical rancid-butter odor of the diseased muscle and the juices of the same.

In the cutaneous form of Hemorrhagic Septicemia and Rabies in cattle, the symptoms and duration of the disease are very similar but the finding of the hemorrhagic condition of the various organisms of the body and also the hemorrhages which usually exist in the coverings of the brain and spinal cord will differentiate this form of Hemorrhagic Septicemia from Rabies.

Hemorrhagic Septicemia of Swine, commonly called Swine Plague, appears in the form of pleuro-pneumonia. The symptoms of this condition may be confused with round worms in the lungs, which are identical with those of Hemorrhagic Septicemia, but the long course of the parasite disease should be taken as an indication that the pig is not affected with Hemorrhagic Septicemia.

The writer does not feel that true Swine Plague or Hemorrhagic Septicemia occurs very often in conditions in the field, but instead of a pure Hemorrhagic Septicemia we usually have present a mixed infection which consists of *B. suis*, *Staphylococci*, and *B. coli communis*. It has been stated many times that the *Bacillus necrophorus* plays a very important part in this disease, both in the pulmonary and the intestinal form, but I wish to take exception to these statements that this last named organism plays such an important part in this disease. This opinion is based upon the laboratory findings of a great number of specimens which have been recently examined at our laboratories and also upon the results which have been obtained in the treatment of this disease.

It is very difficult to differentiate between Swine Plague and Hog Cholera. The two diseases may exist at one time in the same animal and the postmortem findings in a great many instances will be found to be apparently the same, but a differentiating feature which should be noted in connection with these two diseases is, that in case the disease seems not to be of a very contagious nature and does not spread rapidly from one farm to another, the larvæ of *Strongylus vulgaris* cause aneurisms of the great era. But, on the other hand, if it spreads very rapidly with a very high mortality, it is quite evident that you are dealing with Hog Cholera in these animals.

After carefully considering all of the above conditions, differentiating between various diseases, it is advisable to collect specimens of both blood and diseased tissue, pack the same in ice and forward to a reliable laboratory for a confirmatory diagnosis.

THE ANTHELMINTIC TREATMENT OF EQUINE INTESTINAL STRONGYLIDOSIS.

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Strongyles, including for the most part species of the genus *Strongylus* (*Sclerostomum*) and *Cylicostomum* (*Trichonema*, *Cylicostomum*, "*Sclerostomum tetracanthum*"), are very common parasites of the large intestine of the horse, and are regarded as rather serious parasites. The adult worms of the genus *Strongylus* are blood-suckers, as their red color indicates, and the habit of sucking blood produces here, as elsewhere, resultant anemic conditions and the associated lowering of vitality and of resistance to other injurious factors. The larval worms develop in various organs and tissues outside of the digestive tract and in the walls of the digestive tract, acting as foreign bodies and occasioning varying degrees of injury according to location. The larvæ of *Strongylus vulgaris* cause aneurisms of the great mesenteric artery, and later pass, as agamic adults, to the walls of the cecum, where they form small cysts or abscesses. The larvæ of *Str. equinus* usually occur in the liver, lungs and pan-

creas. The larvæ of *Str. edentatus* are especially apt to occur under the serous membranes, the peritoneum and pleura, but may occur almost anywhere. The larvæ of *Cylicostomum* occur in cysts in the walls of the large intestine. Verminous aneurisms are well known to veterinarians as the potential cause of sudden death by rupture, of intermittent lameness from embolism due to particles from the aneurism lodging in the blood vessels of the hind legs, and of verminous colic from embolism similarly occasioned occurring in the blood supply of the large intestine.

The symptoms resulting from infestation with these worms are diarrhœa, loss of appetite, emaciation, and anemia. Later the animal may show edema, joint infection, intermittent colic, or the other symptoms noted. The condition, like almost all worm diseases, is afebrile. The disease may prove fatal, become chronic as the result of injuries to tissues, or the animal may recover.

The noted French authority, Railliet (1915), states that it is difficult to expel parasites from the large intestine by oral medication in any host species, and this is the general view of parasitologists and veterinarians. It is quite decidedly the prevailing view as regards the expulsion of strongyles from the horse. Here the worms are remote from the mouth and associated with large masses of undigested material in a way that makes dilution of the anthelmintic certain and contact with the worms theoretically difficult. Somewhat to our surprise, our experiments showed that these worms could be removed with great certainty and with a high degree of efficacy as regards the number removed compared with the total number present. Inasmuch as our findings in these experiments are completed by postmortem examination, these results are dependable. Of course, occasionally failures must be expected, but strongyloidosis is more susceptible of successful treatment than has been thought.

Our explanation of the high degree of efficacy obtained in the removal of worms from the cecum and colon of the horse is that it is due to the increase in the time factor, as regards period of exposure of the worm to the anthelmintic. Anthelmintic efficacy is a product of certain factors—the potency of the drug, the amount of the drug, the contact with the worms, and the period of contact with the worms. In a general way, an increase in any of these factors increases their product, which is the anthelmintic efficacy. Food and drugs pass rather rapidly from the stomach and through the small intestine of the horse, but they lie for

comparatively long periods in the cecum and double colon. It seems entirely probable that the long period in which anthelmintics may operate in the large intestine is responsible for the high efficacy they attain. In this connection it should be noted that food enters the cecum of the horse through one aperture and passes out through another, a condition not present in such animals as the chicken, dog, swine, sheep, cattle, etc. In the latter animals, it is theoretically possible, and, in the case of the dog, entirely probable from the evidence of such anthelmintic experiments as those of Hall and Foster (1918), for drugs to pass the ileocolic or ileocecal valve to the colon without entering the cecum. This is not possible in the horse, so that drugs can be depended on to enter the cecum if they pass the ileocecal valve.

The method used by us in our experiments was the one already published by one of us (Hall, 1917) in connection with a study of the action of carbon bisulphide on bots. One of us (Wilson) administered the drugs, supervised the feeding and fasting of the horses and the collection of the manure and made the general postmortem examination. The others made daily collections and identifications of the worms from the manure, collected and identified the worms present postmortem, and noted the condition of the digestive tract postmortem. Worms were only identified as far as their genus, it being out of the question to identify species of *Cylicostomum* *Trichonema* from manure in work of this sort and unnecessary to do this or identify species of *Strongylus* in ascertaining efficacy. Our results do not indicate that any particular species shows any special resistance. The manure was examined daily, being picked apart slowly and carefully. This is a slow and tedious task, but entirely feasible. A few *Cylicostomum* are doubtless overlooked, but the oversights antemortem and postmortem probably offset one another, leaving the ascertained percentage of anthelmintic efficacy substantially correct. Rubber gloves were worn to protect the hands, but the task of examining manure thus is not so unpleasant as might be imagined. On postmortem examination, the contents of the large intestine were examined in the same way, and the worms collected, counted and identified. Our work covered the efficacy of our drugs against other worms, as well as strongyles, and these findings are covered in the paper immediately following this.

Railliet (1915) notes that Giles gave a pony thymol to remove *Cylicostomum*, using 3 doses of 15 grams each, which removed many worms. Subsequently he gave the same animal a lavage

with a watery emulsion of 45 grams of thymol dissolved in alcohol. This killed the worms and the horse. Railliet also notes that Theobald gave a horse thymol, 1 gram in the morning and 1 gram in the evening, the dose being dissolved in 30 grams of alcohol. The next day he gave castor oil. Theobald claims that this killed strongyles, ascarids and pinworms, and even killed the encysted forms. Railliet further notes that Dorn and Boehberg used atoxyl, the former injecting 3 grams in 100 grams of water at 37°C., and the latter injecting 0.2 to 1.5 grams in 1 percent saline solution intravenously and subcutaneously. Leneveu (1915) recommends the use of carbon bisulphide in gelatine capsules, giving 2 to 5 grams, according to the size of the animal, every day for 5 days, and following this on the sixth day with a purgative, preferably magnesium sulphate. Conreur (1915) gives 1- to 2-year-old colts a hard soap bolus containing 6 gms. of thymol, a half a gram of santonin, and 6 gms. of aloes. One bolus is given every 2 to 4 days for a total of 3 or 4 doses. The dose is doubled for a 3-year-old.

In our experiments, some of the common anthelmintics which are given to horses for worms, usually for ascarids, were tested. These anthelmintics were iron sulphate, tartar emetic, and turpentine. In addition we tested oil of chenopodium, which has been recommended for worms in horses by Thum (1915) and by Woolridge (1916). Thum gives suckling foals 3 doses at 2-hour intervals for a total of 50 drops, followed 2 hours later by castor oil if desired, and gives 50 to 100 drops to colts which are weaned. He thinks it is much safer than tartar emetic. Woolridge gave a horse 1 dram of oil of chenopodium and 40 grains of thymol twice a day for a month and reports that the animal passed myriads of worms and became fat. The dosage used and recommended for the other drugs named varies considerably. Iron sulphate is given in doses of 1 ounce to the fasting animal, in 2- to 4-dram doses in a mash, twice a day for 7 days. Tartar emetic is given in doses of one ounce in aloes ball to the fasting animal, 2 to 4 drams in a mash twice a day for 5 days, etc. Turpentine is usually given in doses of 1 to 4 ounces in a half pint to a quart of linseed oil. Place (1915) says of turpentine: "One or two teaspoons of chloroform increases the effectiveness of the mixture and the risk."

Our experiments were as follows:

Horse No. 1640, a 14-year-old gelding weighing 1075 pounds, was given 2 drams of iron sulphate in a mash daily for 7 days.

The third day of treatment the horse passed 2 *Cylicostomum*, the fourth day 1, and the sixth day 1, a total of 4 *Cylicostomum*. The horse was killed 10 days after the last treatment, the manure being examined during this period following treatment. On postmortem examination the animal had 288 *Cylicostomum* and 80 *Strongylus*. The treatment was 0 percent effective against *Strongylus* and much less than 1 percent effective against *Cylicostomum*; in other words, a failure.

Horse No. 32, an 11-year-old gelding weighing 1250 pounds, was given 2 drams of tartar emetic in a mash daily for 5 days. The third day the horse passed 1 *Cylicostomum*, the fourth day 1, the first day after the last treatment 2, the third day 4 *Cylicostomum* and 1 *Strongylus*, the seventh day 1 *Cylicostomum*, and the twelfth day 1, a total of 10 *Cylicostomum* and 1 *Strongylus*. On postmortem the horse had 5474 *Cylicostomum* and 312 *Strongylus*. The treatment was therefore less than 1 percent effective against *Cylicostomum* and *Strongylus*; in other words, a failure. The small intestine showed numerous petechiæ and ecchymoses which were apparently due to the action of the drug.

Horse No. 371, a 9-year-old gelding weighing 1050 pounds, was given 2 ounces of turpentine, followed immediately by a quart of linseed oil. The next day the horse passed 9 *Strongylus* and 56 *Cylicostomum*, the second day 50 *Strongylus* and 211 *Cylicostomum*, the third day 18 *Strongylus* and 3 *Cylicostomum*, the fourth day 3 *Strongylus*, the fifth day 22 *Strongylus*, the sixth day 3 *Cylicostomum*, a total of 102 *Strongylus* and 274 *Cylicostomum*. The seventh day the animal passed no worms and was killed. On postmortem examination the horse had 105 *Strongylus* in the cecum and 7 in the colon, a total of 112; no *Cylicostomum* was found. The treatment was therefore 100 percent effective against *Cylicostomum* and 48 percent effective against *Strongylus*, a very good showing. This horse had been fasted less than 24 hours, and it is possible that greater efficacy would have resulted from a longer period of fasting.

Horse No. 1641, a 13-year-old mare weighing 1100 pounds, was given 8 mls of oil of chenopodium, followed immediately by a quart of linseed oil. The third day after treatment the horse passed 1 *Cylicostomum*, the fourth day 1 *Cylicostomum*, and the sixth day 1 *Strongylus* and 430 *Cylicostomum*. The treatment was therefore less than 1 percent effective against strongyles; in other words, a failure. This horse had been fasted less than 24 hours.

Horse No. 89, an 11-year-old gelding weighing 1070 pounds, was given 10 mils of chenopodium, a somewhat larger dose than in the previous case, followed immediately by a quart of linseed oil. The second day the horse passed 5 *Strongylus* and 169 *Cylicostomum*, and the third day 2 *Cylicostomum*. The horse was killed the third day. On postmortem examination, 16 *Cylicostomum* were found dead and being passed out in the floating colon, making a total of 187 *Cylicostomum* to be credited to the anthelmintic. There were still left 1545 *Strongylus* and 448 *Cylicostomum*. The treatment was therefore less than 1 percent effective against *Strongylus* and was 29 percent effective against *Cylicostomum*. The horse had been fasted less than 24 hours and was inadvertently fed shortly before treatment.

Horse No. 272, an 11-year-old gelding weighing 1150 pounds, was given 16 mils of chenopodium, double the dose given to No. 1641, followed immediately by a quart of linseed oil. The next day the horse passed 4 *Strongylus* and 17 *Cylicostomum*, the second day 7 *Strongylus* and 15 *Cylicostomum*, the third day 39 *Strongylus* and 70 *Cylicostomum*. The horse was killed on the fourth day and found to have 19 *Strongylus*. The treatment was therefore 100 percent effective against *Cylicostomum* and 76 percent effective against *Strongylus*. The horse was fasted less than 24 hours before treatment.

Horse No. 273, an 11-year-old gelding weighing 1100 pounds, was given 18 mils of chenopodium, followed immediately by a quart of linseed oil. The next day the horse passed 64 *Cylicostomum*, the second day 293 *Cylicostomum* and 7 *Strongylus*, and the third day 64 *Cylicostomum* and 1 *Strongylus*, a total of 421 *Cylicostomum* and 8 *Strongylus*. On postmortem examination the horse had 7 *Cylicostomum* and 1 *Strongylus* in the floating colon, which should be credited to the efficacy of the anthelmintic. There were also 102 *Strongylus* and 3195 *Cylicostomum*. The treatment was therefore 11 percent effective against *Cylicostomum* and less than 1 percent effective against *Strongylus*. The horse was fasted less than 24 hours before treatment.

Horse No. 1033, a 6-year-old gelding weighing 1075 pounds, was given 16 mils of chenopodium, followed immediately by a quart of linseed oil, the horse having been fasted a full 24 hours before treatment. The next day the animal passed 1 *Cylicostomum*, the third day 30 *Cylicostomum* and 30 *Strongylus*, the fourth day 34 *Cylicostomum* and 49 *Strongylus*, and the fifth day 12 *Cylicostomum* and 8 *Strongylus*, a total of 77 *Cylicos-*

tomum and 107 *Strongylus*. The animal was killed on the fifth day. On postmortem examination there were found 2 larval *Cylicostomum* that might have issued from a cyst in the esophageal mucosa after the treatment, and probably did do this. Regarding them as having issued from their cysts after the passage of the anthelmintic, the treatment was 100 percent effective against *Cylicostomum* and *Strongylus*. Even regarding them as surviving the anthelmintic would make the treatment 97 percent effective against *Cylicostomum*.

Horse No. 240, an 8-year-old gelding weighing 1100 pounds, was given 16 mls of oil of chenopodium followed 2 hours later by a quart of linseed oil. The next day the horse passed 352 *Cylicostomum* and 1 *Strongylus*, the second day 184 *Cylicostomum* and 26 *Strongylus*, the third day 4 *Cylicostomum* and 22 *Strongylus*, the fourth day 6 *Strongylus*, and the fifth day 2 *Strongylus*, a total of 540 *Cylicostomum* and 61 *Strongylus*. The horse was killed on the fifth day. On postmortem examination, 2 dead *Strongylus* were found in the floating colon and 3 dead *Strongylus* in the double colon, which worms must be regarded as killed by the anthelmintic. There were also 3 live *Strongylus* in the cecum. The treatment was therefore 100 percent effective against *Cylicostomum* and 96 percent effective against *Strongylus*.

Horse No. 1031, an 8-year-old gelding weighing 1060 pounds, was given the iron sulphate treatment. The intention was to give doses of 4 grams of iron sulphate twice daily in a mash, for a period of 7 days, but as the horse refused to clean up this amount of medicated mash, the 14 doses were administered over a period of 12 days. The manure was only casually examined for *Strongylus* and *Cylicostomum*, being primarily examined for ascarids. The third day of the treatment the horse passed 1 *Cylicostomum*, the fifth day 2 *Cylicostomum*, a total of 3 *Cylicostomum*. Sixteen days after beginning treatment, the horse was given 3 doses of 6 mls of chenopodium at hour intervals, the last dose being followed an hour later by a quart of linseed oil. The horse was fasted over 24 hours. The day of treatment the horse passed 49 *Cylicostomum*, the following day 1024 *Cylicostomum* and 54 *Strongylus*, the second day 103 *Cylicostomum* and 11 *Strongylus*, the third day 30 *Cylicostomum*, the fourth day 35 *Cylicostomum* and 6 *Strongylus*, and the fifth day 1 *Cylicostomum* and 5 *Strongylus*, a total of 1242 *Cylicostomum* and 76 *Strongylus*. The horse was killed on this fifth day and found to have 2 larval *Cylicostomum*, which we regard as having left their

cysts in the intestinal mucosa after the anthelmintic had passed out, and 4 live *Strongylus* in addition to the 2 dead *Strongylus* passing out in the floating colon. The treatment was therefore 100 percent effective against *Cylicostomum* and 95 percent effective against *Strongylus*.

From the foregoing experiments we may come to the following conclusions:

Iron sulphate in the light dose used (2 drams in a mash daily for 7 days) was a failure, removing no *Strongylus* and less than 1 percent of the *Cylicostomum* present. Not too much may be concluded in regard to the value of larger doses, but in view of the fact that this treatment is not recommended for strongyles, it is likely that it is not of much value. This conclusion is substantiated by the poor results obtained from the administration of 7 ounces of iron sulphate over a period of 12 days in the case of Horse No. 1031.

Tartar emetic in the light dose used (2 drams in a mash daily for 5 days) was a failure, removing less than 1 percent of the strongyles present. The evidence of severe irritation in the digestive tract postmortem inclines us to believe that this drug is not apt to prove of much value in this condition, as increased size of dose to secure greater efficacy would mean a degree of gastro-intestinal irritation that in our opinion should be avoided.

Turpentine in a moderate dose (2 ounces in a quart of linseed oil) was a rather effective remedy in the one test made, removing all of the *Cylicostomum* and 48 per cent of the *Strongylus*.

Oil of chenopodium was a failure in small doses with less than a 24-hour fast, failing to remove 1 percent of the strongyles present in a dose of 8 mils; it was less than 1 percent effective against *Strongylus* and only 29 percent effective against *Cylicostomum* in a dose of 10 mils. In larger doses, with less than a 24-hour fast before treatment, the findings are somewhat contradictory: a 16-mil dose was 100 percent effective against *Cylicostomum* and 76 percent effective against *Strongylus*, while an 18-mil dose was 11 percent effective against *Cylicostomum* and less than 1 percent effective against *Strongylus*. In these same larger doses, with fasts of at least 24 hours, the treatment is highly effective. In one case, where the chenopodium and linseed oil were given simultaneously, the treatment was apparently 100 percent effective against strongyles; in another case, where the linseed oil was given 2 hours after the chenopodium, the treatment was 100 percent effective against *Cylicostomum* and 96

percent effective against strongyles; in another case, where the the chenopodium was given in divided doses followed by linseed oil an hour after the last dose, the treatment was 100 percent effective against *Cylicostomum* and 95 percent effective against *Strongylus*.

SUMMARY.

Contrary to what has been supposed, the removal of strongyles from the large intestine of the horse presents no great difficulties. The remedy of choice is oil of chenopodium, which displays an efficacy of 95 to 100 percent when given to horses fasted 36 hours and given in doses of 16 to 18 mls, in one dose or in divided doses, accompanied by a quart or a liter of linseed oil or followed one or two hours later by this amount of linseed oil. The small worms, *Cylicostomum*, are more readily removed than the large, red palisade worms, *Strongylus*, probably due to the fact that *Strongylus* attaches to the mucosa and *Cylicostomum* does not. Turpentine appears to be the second choice of the remedies tested. In the doses used, iron sulphate and tartar emetic gave very poor results and promised little of value in the treatment of strongylidosis.

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SOME NOTES ON THE TREATMENT OF EQUINE ASCARIASIS AND OXYURIASIS.

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In the foregoing paper the writers have shown that equine intestinal strongylidosis, contrary to what might be supposed, is a disease readily amenable to treatment so far as the removal of the adult worms from the intestine is concerned. In this paper we can confirm the idea that equine oxyuriasis is readily amenable to anthelmintic treatment, as has been stated by such authorities as Railliet, and the idea that equine ascariasis is not readily amenable to anthelmintic treatment by therapeutic doses of safe anthelmintics of which we are at present aware, as Neveu-Lemaire has noted.

In the series of 10 horses used in the anthelmintic investigations reported in our foregoing paper, 7 had infestations with *Oxyuris equi*. The anthelmintic treatments given (for which, see the paper referred to) removed 100 percent of the pinworms present from 5 of the 7 horses, as follows: Horse No. 240, 2 worms; Horse No. 1031, 1 worm; Horse No. 1033, 1 worm; Horse No. 32, 1 worm; Horse No. 371, 34 worms. Treatments failed entirely to remove worms and left worms present as follows: Horse No. 273, 2 worms; Horse No. 1640, 3 worms.

Reference to the foregoing paper shows that 18 mls of oil of chenopodium, followed immediately by a quart of linseed oil, in the case of an animal that had fasted less than 24 hours, was a failure, and that 2 drams of iron sulphate in the feed daily for 7 days was a failure. It may be noted also that the administration of 7 ounces of iron sulphate over a period of 12 days to Horse No. 1031, previous to the administration of the chenopodium, was also a failure. On the other hand, the treatments with adequate doses of oil of chenopodium, 16-18 mls, to animals fasted over 24 hours, with 2-ounce doses of turpentine, and with daily administration of 2 drams of tartar emetic in the feed for 5 days, were entirely successful.

Of the same 10 horses, 8 had ascarids, *Ascaris equorum*. The anthelmintic treatments given were entire failures in the case of 4 of the 8 horses and left worms present as follows: Horse No. 89, 30 worms; Horse No. 371, 15 worms; Horse No. 272, 1 worm; Horse No. 1641, 4 worms. The treatment removed 3 percent of the worms from Horse No. 1033, removing 7 and leaving 214; 8 percent from Horse No. 32, removing 1 and leaving 11; 12 percent from Horse No. 273, removing 2 and leaving 14; and 25 percent from Horse No. 1031, removing 1 and leaving 3.

The foregoing results are not of themselves especially encouraging, but they constitute a guide for further work and considering the lack of dependable experimental work in this field they cannot be regarded as discouraging. Equally unsatisfactory results in initial experiments are very commonly followed by entirely satisfactory results, and it is worth while to know what methods will not prove profitable. Modifications in the size of dose or mode of administration of some of the drugs noted may give much higher values for the drugs used. At present we can only state that additional experimental work is necessary before we can feel that we have a dependable anthelmintic for the removal of ascarids from horses.

CIVIL SERVICE COMMISSION ASKS FOR TYPE- WRITERS AND STENOGRAPHERS TO HELP WIN THE WAR.

The United States Civil Service Commission requests our assistance in the campaign to recruit a sufficient number of stenographers and typists, both women and men, to meet the great demand of the Government offices in Washington, D. C. Those who have not the required training are encouraged to undergo instruction at once. Tests are given in 550 cities every Tuesday. Full information and application blanks may be obtained from the Secretary of the Local Board of Civil Service Examiners at the postoffice or custom-house in any important city. This is a "win-the-war" measure.

CLINICAL AND CASE REPORTS.

"Knowledge is born in laboratories and in the experience of the thoughtful. It develops form in the journals, and 'when dead it is decently buried in books'."

MYCOTIC CEREBRO-SPINAL MENINGITIS PREVALENT IN THE SOUTH.

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Due to peculiar climatic conditions, which are responsible at this time for the toxicity of mould, or fungus, on vegetation throughout pastures, there are in some five or six southwestern parishes of the state extensive outbreaks of Mycotic Cerebro Spinal Meningitis, affecting mules and horses.

Investigations from this office and reports from deputy veterinarians indicate that the condition is diffuse over wide areas and that the mortality is high. Preventive measures, consisting mainly in the removal of all animals to dry lots or barns, and feeding of well-cured grain, in addition to pure, uncontaminated water, is curtailing outbreaks where such advice is being adopted.

A PECULIAR DISEASE OF SHEEP.

Dr. R. R. Dykstra, Manhattan, Kansas, reports the prevalence, in the State of Kansas during the summer, of a peculiar disease of sheep, which, so far as he has been able to observe, corresponds in every respect to a condition described as "Big Head in Sheep" in a circular issued by the United States Department of Agriculture, May 4, 1914, a bulletin on the subject having been written by Dr. H. J. Frederick of the Utah Experiment Station.

The Veterinary Department of the Kansas State Agricultural College has conducted some minor investigations, but up to recently nothing new has been discovered outside of the information in the Bureau of Animal Industry circular. The disease has become so prevalent in Kansas that, at the instigation of Dr. Dykstra, the College Publicity Department has sent out informa-

tion regarding it similar to that contained in the following short article:

BIG HEAD IN SHEEP.

This is a peculiar ailment affecting lambs in particular, though older sheep are occasionally affected. The first noticeable symptoms of the disease are that the animal throws its head up in a peculiar jerking manner and tries to rub or scratch it. The animal sometimes runs into other sheep and objects in its path on account of the fact that the eyesight is affected. In a very short time the ears become of a reddish color and greatly enlarged. At the same time the face becomes swollen and little drops of serum of a light yellow color make their appearance on the swollen parts. The animal is always feverish. The foregoing symptoms may develop into severe forms of the disease in from thirty minutes' to one hour's time. In very severe cases the tongue may become swollen so that the mouth is completely filled. This causes difficult breathing so that the animal will struggle, become exhausted, and soon die. The symptoms are not so intense in all cases, so that there are occasionally spontaneous recoveries.

This disease has been observed by sheep men for upwards of thirty years in Utah and the surrounding states, causing great loss in those sections. It is spoken of by sheep men as "Big Head." It has not been previously observed in the plains states.

The cause of the condition is not known, though it seems that climatic conditions have something to do with its appearance. It is quite readily treated if affected sheep are held immediately after they show the first symptoms. *Absolute rest* and protection from the direct sun light is followed by recovery in from eight to twenty hours, the animals appearing as well as ever. In addition, it is a good plan if the swollen parts of the head are annointed with vaseline or olive oil.

HOGS AND THE TENT CATERPILLAR.

The following interesting report is from Dr. F. M. Hayes, University Farm, Davis, California:

In June, 1918, the writer was called to investigate a disease in hogs suspected by the owners to be hog cholera. The true cause and effects were found to be so unusual that they may be worthy of publication and of interest to the readers of the *Journal*.

The condition was reported on two ranches in a small valley of 25 square miles. The foot hills were thickly covered with oak trees and dry grass. The hogs ranged from the edge of the valley floor to a considerable distance up the hills. On those ranches reporting trouble about thirty hogs had died within two weeks, while the remainder of the two herds of forty-seven and thirty-five, respectively, were showing some symptoms of disorder. The condition had been variously diagnosed by the residents as "poisoning from dead ground squirrels," "change of feed from range to barley," "fungi growing in the stomach," "hog cholera," etc.

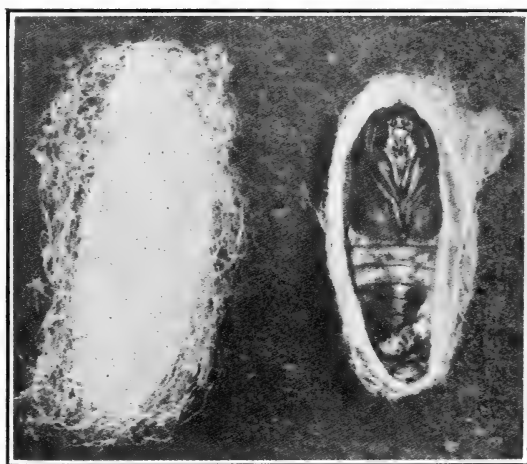
The most prominent symptom noted was the defecation of long strings of feces. This was accompanied by severe straining, which resulted, in many cases, in leaving a trail of several inches of feces still attached to the hog. All of the hogs looked gaunt, but most of them were on feed. The owners had a short time before corralled the hogs and were feeding soaked barley. Fever was not a constant symptom, but was found in hog later upon autopsy.

A pig showing symptoms of abdominal distress and apparently moribund was selected for an autopsy. A well-defined volvulus of the small intestine was at once noted. A considerable length of this bowel was swollen, the walls and lumen containing a quantity of extravasated blood. The peritoneal cavity contained an excess of fluid. Other lesions were not important. Upon opening the digestive tract from the stomach to the anus an undigested mass was removed in one continuous string intact. A dissection of this material showed it to be largely composed of a fine, wool-like fiber enmeshing bits of grass, barley hulls and small fragments of a dark brown material. The wool-like fibers on being separated appeared finer than wool, and suggested some woolly plant or silk.

The owners had held autopsies on a few of the dead hogs and from their description it seems probable that the exciting causes of death in most instances were invaginations and twists of the bowel. We should expect such pathological changes from the nature of the cause.

It was evident by this time that the etiological factor must be sought in the feeding conditions. An examination of the range was begun. The first object of a suspicious nature observed was a cocoon of the tent caterpillar attached to a plant near the ground. The individual fibers of the cocoon were identical, as far as the eye could observe, with the individual fibers of the

*Photo from Bureau of Entomology,
U. S. Dept. of Agr.*



Tent Caterpillar and Uncovered Pupa.



F. M. HAYES

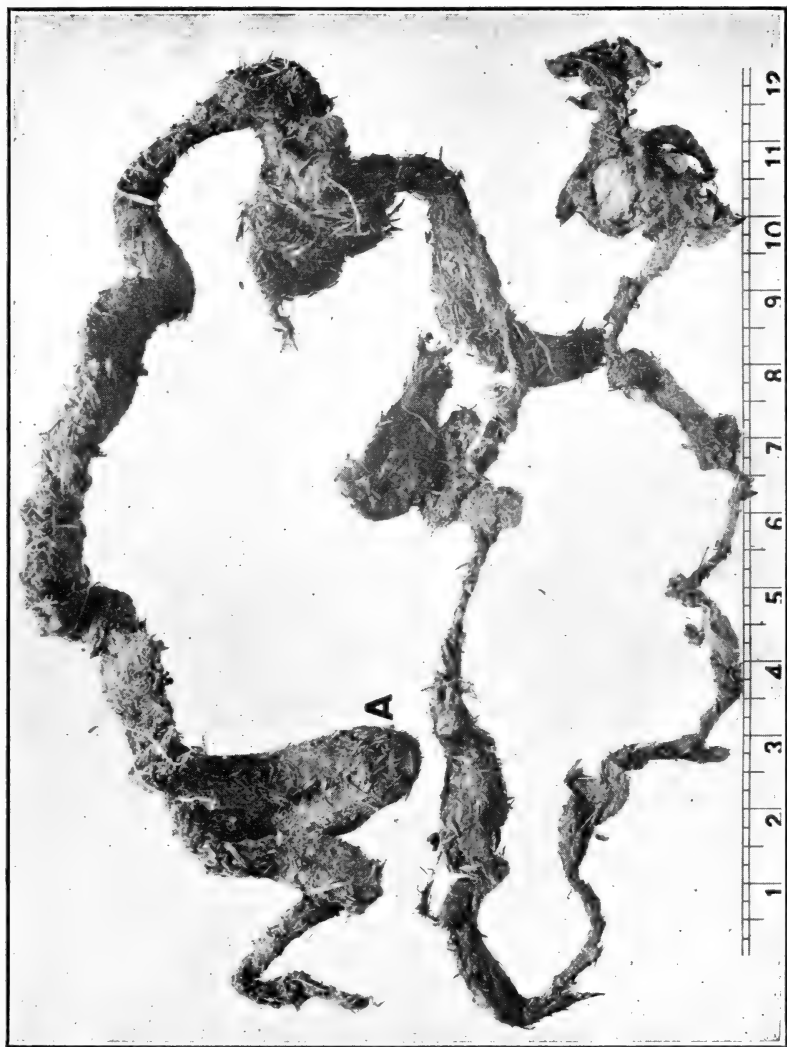
Tent Caterpillar Cocoons Attached to Oak Leaves.



F. M. HAYES

Indigestible mass of cocoon silk and pupae, grass and barley taken from a pig's stomach. B. End extending through the pylorus.





F. M. HAYES

Over three feet of adherent intestinal contents. The cocoon silk fibres matted so that the contents of the stomach, small and large intestines made one long, continuous rope. Note (A) ileocaecal valve contour.

intestinal mass. A further search disclosed hundreds of these cocoons on plants along ravines and on the leaves of the oak trees. Some of the oaks were practically denuded of leaves by the tent caterpillars, many of which were still to be seen. This evidence resulted in the owner of the hogs stating that the caterpillars had not been so numerous in his ten years of residence there.

To complete the evidence against the tent caterpillar cocoon, a number were collected. A few were thrown in front of a healthy looking shoat. They were consumed with avidity. The experiment was repeated on others, with the same result. A closer inspection of the stomach contents of the hog upon which the autopsy was held proved the dark brown fragments mentioned above to be masticated pupæ. We now felt justified in concluding that the cocoon of the tent caterpillar was the causative factor in this trouble.

No treatment was advised other than to keep the hogs away from the infested range until the pupæ had emerged. The majority recovered under this treatment. The older hogs either had not acquired a liking for the juicy pupæ or were better able to take care of the indigestible silk fiber of the cocoon.

Professor E. R. DeOng of the Entomology Division of the University of California has submitted the following interesting facts concerning the life history and the periodic outbreak of the tent caterpillar in relation to range feeding of hogs:

"California forests are subject to periodic outbreaks of the forest tent caterpillar (*Malacosoma disstria*), oaks being especially liable to their attack. During these outbreaks thousands of acres of forests are practically defoliated, the trees and shrubbery swarming with caterpillars, which have hatched from little bands of eggs attached to the twigs throughout the winter; and then as suddenly as they appeared the army is gone. To the careless observer the worms are dead but a closer examination shows their hairy cocoons, scattered over the forest floor, on logs, brush and tree trunks. In these cocoons are developing moths. The greater part of these have been parasitized and instead of the rightful descendant there appear swarms of hairy flies and parasitic wasps. Next year the order is reversed, an excess of parasites starves to death from lack of host insects, for the caterpillars are very rare this summer, but will be increasing year by year, as will also their insect enemies. In the course of five or six years another outbreak of caterpillars will probably occur and furnish an abundance of cocoons for which the hogs may again acquire a taste."

ABSTRACTS FROM RECENT LITERATURE.

TYMPANITES IN DOG.

Brown curly-coated retriever.—Vomiting, and abdomen measuring 24 inches in circumference just in front of penis. Palpitation drumlike, and no waves on percussion; in feel like a football blown up. I inserted horse trocar and canula high up and downwards and forwards in right flank. Air rushed out for three minutes. Great relief of dog and cessation of vomiting. Abdomen now measures 20 inches in circumference.

Gave *aredicum liq. am. fort.* 5 minims, *taraxacum* 1 fl. drachm, *tr. nux. vom.* 10 minims, and repeated next day. Could detect no foreign body in stomach or bowels. Dog made an excellent recovery.

Find no record in canine text-books of hoven in the dog; probably due to war rations.—G. Mayall, M. R. C. V. S., Bolton, in *Veterinary Journal*.

MANGE IN HORSES.

Sir Stewart Stockman, Chief Veterinary Officer of the Board of Agriculture, recently gave an address to London carmen on "Parasitic Mange in Horses" at the Elephant and Castle Horse Repository. It was mentioned by Mr. A. L. Leon, Chairman of the Public Control Committee, London County Council, that 500 horses suffering from mange were now under detention in London, and there were about 5,000 cases in Great Britain.

Sir Stewart Stockman attributed the increase of mange to short rations, shortage of labor, and the fear of owners to report cases. But the Board had issued an order enabling owners to use their horses for work under certain conditions that prevented contagion. He explained the characteristics of the two forms of mange, the more serious form presenting some difficulty through the burrowing of the parasite into the animal's skin, and described the treatment by a lime and sulphur mixture which he

recommended, advising that it should, as an additional safeguard, be used in combination with tar-oil and tar dips. The cost of bathing a horse was two or three pence (4 or 6 cents).—*Morning Post* (London).

STANDARDIZED TUBERCULIN.

A veterinary correspondent writes to the Glasgow Herald:

It must be obvious to all parties engaged in the cattle trade of this country, and more especially to breeders and exporters of pedigreed stock, that unless a recognized and standardized tuberculin is at once placed on the market by the various tuberculin manufacturers, our export trade in pedigreed cattle will suffer. There are too many makes of tuberculin on the market at present. The tuberculin is of varying strengths, therefore it is often unsatisfactory in results. German and Austrian tuberculin is likely to be kept out as at present. So it remains for the Allied countries to decide as to what standard tuberculin should be used to test cattle.

If a conference of cattle breeders and exporters were at once called at some agreed upon center, this matter could be discussed in a friendly way. I am satisfied that most important matters could be satisfactorily arranged. When this part of the question is properly dealt with the actual work of testing the cattle would be seen to. The testing should be carried out by qualified veterinary surgeons. Any irregularities in the actual testing could then be more easily discovered and summarily dealt with. The offenders could be punished and prevented from having any hand whatever in the future testing of cattle with tuberculin.—*Veterinary News*.

NECROSIS AND OSSIFICATION OF THE CARTILAGES OF THE LARYNX OF THE HORSE.

(Nécrose et ossification des cartilages du larynx chez le cheval.)

CHARMOY, Rec. Méd. Vét. Vol. XCIV., No. 7. April 15, 1918.

In this paper Charmoy describes the lesions found by him in the larynx of four cases in which symptoms of laryngeal paralysis were very severe. Although it was not possible to learn any

particulars of the history of the cases, there was evidence that in three of them the Williams operation had been performed, while in the fourth some laryngeal operation of an unknown nature had been attempted. In all four animals there were fistulæ, which in three opened into the cavity of the larynx; in the other case the opening was on the surface of the body. Postmortem examination revealed necrotic areas either in the thyroid, cricoid, or arytenoid cartilage, or in more than one of these, surrounded by ossification of the cartilage.

The author points out that diagnosis of ossification is possible on palpation, when rigidity of the cartilages, and often some hypertrophy of the walls of the larynx, may be recognized. Naturally, diagnosis can be confirmed with certainty only by an exploratory laryngotomy.

In discussing the etiology of the necrosis and the consequent ossification, the author concludes that the lesions in his cases could only have had a traumatic origin; and, seeing that contusions and accidental wounds of the larynx are somewhat rare, he is of the opinion that the traumatism was inflicted during the operation intended to relieve the symptoms of laryngeal paralysis. He therefore insists on the importance of the avoidance of injury during laryngeal operations.—*Veterinary Review*.

ARMY VETERINARY SERVICE.

MAJOR'S RANK NOT FOR VETERINARIANS.

The following is taken from among the Comptroller's decisions published in *The Army and Navy Journal* of September 7:

"The appointment or promotion of a veterinarian to the rank, with pay and allowances, of a major is not authorized by existing law."

APPOINTMENTS AND REDUCTION OF ENLISTED VETERINARIANS.

General Orders, No. 58:

IV. 1. The following methods of appointments and reduction of the enlisted personnel of the Veterinary Corps will govern during the existing emergency:

(a) In divisions, the division veterinarian may promote enlisted men of the Veterinary Corps up to the authorized allowance and may sign warrants "for the Surgeon General."

(b) In veterinary, base veterinary, corps veterinary, and the Army mobile veterinary hospitals the enlisted personnel of the Veterinary Corps will be promoted by the veterinarian in charge, who may sign warrants "for the Surgeon General," except that while any of these units are in a training school any appointment must be approved by the senior veterinary instructor.

(c) In veterinary detachments assigned to auxiliary remount depots, or to remount squadrons, or to any other detached command the sergeants first class, sergeants and corporals will be issued warrants by the Surgeon General upon recommendation of the veterinarian. Farriers, horseshoers, cooks, privates first class and saddlers will be appointed by the veterinarian.

2. Any veterinarian may make reductions when in his judgment the same may be necessary, provided that the officer ordering the reduction shall have the power to fill the vacancy thus created.—*Official Bulletin*, August 15.

COMPLIMENTARY TO LIEUTENANT-COLONEL AND MAJOR MERRILLAT.

The Chicago Sunday Tribune of recent date contained the following complimentary notice, with pictures, of Lieutenant-Colonel L. A. Merrillat and his son, Major L. A. Merrillat, Jr., who are both in France with the American Expeditionary Force:

Wooster, O., Aug. 31.—A Chicago father and son have won promotions in the United States army in France.

Word which has reached Mrs. L. A. Merrillat, at the Merrillat country home near here, states that her husband has been promoted from major to colonel, and that her son, L. A. Merrillat, Jr., has been promoted from captain to major.

Colonel Merrillat was formerly junior member of the firm of Wright & Merrillat, veterinary surgeons, 1827 Wabash avenue, Chicago. He was commissioned a major in the veterinary department of the army early in the summer, and assigned to immediate overseas service. After reaching France he was made the American representative on a Franco-American commission governing the veterinary interests of the two armies. Later he was named

chairman of this commission. Colonel Merillat formerly served both as President and Secretary of the American Veterinary Medical Association.

The son, Major Merillat, is a West Point graduate, and has the honor of being commissioned a major at the age of twenty-six years, which makes him one of the youngest majors in the national army. While at West Point Merillat won fame as a football player, being selected during two successive years as an all-American end. He is serving with the second division of the regular army.

Colonel and Major Merillat recently enjoyed their first meeting on French soil.

Mrs. Merillat is residing at their country home here while her husband and son are serving in France. She is managing their 130-acre farm.

AN INTERESTING LITTLE MEETING OF OFFICERS AT THE SADDLE AND SIRLOIN CLUB.

About forty veterinary officers engaged in meat inspection at Chicago under Major Lytle enjoyed a fine "get-together" dinner at the Saddle and Sirloin Club on the evening of September 6.

Lieutenant John Quinlan presided and told of the excellent work being done, not only in the inspection of meat and other animal food products, but also in the special training given the veterinary officers in the work.

Secretary Mayo, as guest of the evening, told of the work the A. V. M. A. was doing in securing proper recognition of the army veterinarians and in the organization of the present efficient veterinary corps. He also spoke of the debt every veterinarian owed to his profession, and the importance of every one doing his share to elevate and advance the interests of his profession.

Major Lytle deserves much credit for the efficient handling of the work and the men in his department. He has a loyal and enthusiastic group of officers, who are greatly interested in the work. A most enjoyable evening was spent at this famous club, and, as one officer expressed it, "meetings like this put a lot of 'pep' in a fellow." Every one regretted the absence of Major Lytle on account of the death of a relative.

WHY NO MAJORS NOW IN THE VETERINARY CORPS.

The following, which we take from the Army and Navy Journal, September 14, is explanatory of the previous statement:

"The statement in our issue of September 7, quoting the Comptroller of the Treasury as deciding that the appointment or promotion of veterinarians to the rank, with pay and allowances, of a major is not authorized by existing law, brings forth inquiries as to how this may conflict with Par. 1907 of the Quartermaster Manual, based on Sec. 16 of the National Defense Act. The Comptroller makes it plain that the law referred to made it possible for veterinarians in the service on June 3, 1916, to advance to the rank of captain after fifteen years' service; and equally plain that assistant veterinarians, a new grade created by the Act of June 3, 1916, could after twenty years' service be advanced to the grade of major. But as there were no appointments of assistant veterinarians until after the passage of the National Defense Act two years ago last June, it is obvious that there could now be no candidates for promotion to major under the terms of the act, and the Comptroller approves the Auditor's decision that there is now no authority for the appointment or promotion of a veterinarian to the rank, with pay and allowances, of a major."

Major Geo. A. Hanvey, Jr., formerly at Camp Taylor, Ky., is now Division Veterinarian with the 84th Division, American Expeditionary Forces.

Major Gould, Division Veterinarian, 88th Division, visited Camp Upton on his way back overseas and gave the veterinary officers a very interesting talk on their duties to the service.

Major R. J. Foster, who has been stationed at Fort Riley, Kas., as instructor in the Medical Officers' Training Camp, is now with the Veterinary Division, Surgeon General's office, Washington, D. C.

Dr. Wm. D. Odou of Hettinger, N. D., is now a lieutenant in the Veterinary Reserve Corps and is at the Veterinary Training School, Camp Lee, Va.

Dr. J. P. Gardner of Kingston, O., is now in the service as lieutenant and is stationed at Camp Greenleaf, Ga.

Lieutenant H. E. Van Der Veen, who has been stationed at Camp Sherman, O., is now with the 317th Engineers, American Expeditionary Forces.

First Lieutenant J. F. Derivan, V. C., U. S. A. Division Meat Inspector, 88th Division, has been promoted to captain.

Second Lieutenant O. H. Crossland, V. C., U. S. A., 88th Division, has been promoted to first lieutenant.

Second Lieutenant J. R. Barnes has reported at Camp Upton, N. Y., as camp meat inspector.

Dr. Henry T. Juen, formerly of El Paso, Tex., is now Lieutenant Juen of Co. 31, Bn. 7, Camp Greenleaf, Ga.

Lieutenant E. B. Parker has been transferred from the 313th Cavalry, Bel Rio, Tex., to the 45th F. A., Camp Stanley, Tex.

Captain Hadleigh Marsh, who has been at Fort McIntosh, Laredo, Tex., is now located at the Department Laboratory, Fort Sam Houston, Tex.

Dr. Robert Graham of Lexington, Ky., is now with the U. S. Army, Atlanta, Ga.

Lieutenant Ivan G. Howe, who has been at Camp Greene, N. C., is now Brigade Veterinarian of the 9th Brigade, 5th Division, with the American Expeditionary Forces, France. He reports that Major Blattenberg was Division Veterinarian of this Division, but that he has been ordered to the rear to take charge of a base hospital.

Dr. H. N. Waite, formerly of Corsica, S. D., is now in the service and is stationed with Veterinary Co. No. 1, Camp Greenleaf, Ga.

Captain L. E. Willyoung of Chicago, Ill., is now at 86 Mariner St., Buffalo, N. Y.

Lieutenant F. J. Reamsnyder has been transferred from Chicago, Ill., to Camp Las Banos, San Juan, Porto Rico.

Lieutenant D. M. Purdy, who has been at the Medical Officers' Training Camp, Camp Greenleaf, Ga., is now stationed at Camp Lee, Va.

First Lieutenant A. H. Harmening of Chicago has been promoted to a Captaincy.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

RESPONSE TO THE ADDRESS OF WELCOME.

VERANUS A. MOORE, Ithaca, New York.

It is my very pleasant duty, on behalf of the members of the American Veterinary Medical Association, to extend to you, Honorable Sir, and through you to the officials and citizens of Philadelphia, the sincere thanks of this Association for your very cordial, whole-hearted and very gracious welcome. In the warmth of your remarks, you have explained, unconsciously, I know, at least some of the reasons why Philadelphia is known as "The City of Brotherly Love." I wish to say, in reply to your words of felicitation, encouragement and Godspeed to the members of the veterinary profession, that we, who are here assembled, are most grateful. When later, your remarks are read by our absent members, they, too, will be happy to know of your high appreciation of their work.

This Association is very glad for the invitation to meet in your wonderful city. No one can fail to appreciate the opportunity, under such pleasing auspices, to visit the many shrines here consecrated to historic, religious, educational and civic service. The bards of philosophy, art and music also have sung of your glory. Every city has its traditions but no other has the cherished memory of the life and work of a Penn and of a Franklin; no other city in America has in its treaty with the aborigines a clause of perpetuity of title that shall hold "as long as trees shall grow and waters hold their course"; no other city in the world has an Independence Hall wherein was born the liberty America enjoys and for which the world is fighting today. Your industries, the munificence of your institutions of learning, your magnificently equipped and manned veterinary college, fathered by your great university, your splendid and spacious hospitals for the unfortunate and your beautiful parks for recreation and pleasure attract the civilized world. We are familiar, Sir, with the product

of these various centers of thought and activity and now we hope to receive the baptism of inspiration that comes from close association with such noble and holy things.

Notwithstanding your generous hospitality, the magnificence of your city and the richness of your art, there is another reason for our meeting. This great association has developed, with the progress of knowledge of the biology of disease and man's power over it, from a few devoted teachers and practitioners in 1863 to an organization nearly 3000 strong. Its duties and obligations have increased equally with its membership. During this time, we have passed through the most prodigious period of change the world has ever known. What would have been miracles a generation ago are daily occurrences now. The prevention of disease by instructing owners, by sanitary measures, and by immunization involve a field of knowledge so vast that only those who study and toil with determination can hope to succeed. It is to acquaint one another with the new facts from research and experience and the success of new methods that veterinarians have gathered here from nearly every state in the union and province in the Dominion of Canada. These annual gatherings are as pilgrimages for more truth and further light. These men are dedicated to a public service. They are charged with the protection of many billions of dollars' worth of live stock on which our people and those of our allies depend for meat, animal fats, wool and leather.

It is the impression of many people, Sir, that the gasoline engine which is eliminating horses from our cities and which has intensified the barbarism of war, has made the equine species and the veterinary profession objects of history. On the contrary, there never was a war with a larger number of horses in proportion to its man power than this, and there never was a time when the veterinary profession was more in demand than today. Its functions have extended to the prevention and treatment of the diseases of food-producing animals generally. This has multiplied many times the problems of the practitioners. Many readjustments of the profession are being made. The live stock industry of the country, because of human dependence on domesticated animals, is looking to the veterinarian for protection. It has been said that agriculture is the backbone of the nation; that animal husbandry is the backbone of agriculture and that the veterinary profession is the support of animal husbandry. We are no longer obtaining our meat products from animals driven in from the

ranges where they have grown with little human attention but from animals that are coming from the farms where they have been raised as a part of agricultural activity with much labor and expense. Beyond the protection of animals, this profession is rendering a valuable public service in safeguarding the human species from the maladies communicable to it from dumb creation.

At this meeting, our number is likely to be much smaller than usual. This is not an indication of lack of interest but, rather, an expression of patriotism. Many of our members are in uniform in camps and at the battle front, and cannot be here. Others are looking after the flocks and herds of both their clients and those of their fellow practitioners who have gone with the colors. The veterinary profession has responded willingly and generously to the country's call. At all times since the beginning of the war, there has been a waiting list of veterinarians. Many who could not wait have gone as enlisted men in order to do their bit in this awful struggle for liberty and democracy. We have a just and professional pride in the patriotic service of so many of our members. We regret their absence but we rejoice exceedingly in the noble work they are doing. In due time their accomplishments for our country will be recorded and then we all will be proud of them.

Finally, as the program shows, the discussions at this meeting are on timely topics relative to the conservation of animals and means of rendering more efficient service to our clientele. I am taking the liberty, on behalf of the Association, of extending a hearty invitation to you, Sir, and through you to any and all individuals in your city who may be interested in our deliberations. Again I thank you for the privileges you have given us and I trust no undue advantages will be taken. We anticipate a pleasant and a profitable session and when we depart we shall go with feelings of gratitude toward the people of this city who have been so kind to us.

REPORT OF THE COMMITTEE ON INTELLIGENCE AND EDUCATION, 1918.

Your Committee on Intelligence and Education submit the following report:

During the past year one of the members of the committee was called into Army Service and could not give attention to the work, one resigned and the term of one member expired—three new members were appointed to fill these vacancies.

Many conditions arose during the year to defer a meeting of the Committee and the first session was held in Chicago on March 4, 1918. Three members were present: J. A. Kiernan, R. C. Moore and the Chairman. A questionnaire requesting detailed information was prepared and forwarded to every veterinary college in the United States and Canada; replies were received from all colleges except the following: The University of Pennsylvania, McKillip Veterinary College, Washington State Veterinary College, and Texas State Veterinary College. It was decided in addition to the questionnaire that the Committee should visit as many of the veterinary colleges as possible and ascertain if the requirements of the Association were being carried out. Due to a number of causes an investigation of all of the colleges was not feasible.

During the year the Kansas City, San Francisco, Grand Rapids, and Terre Haute Veterinary Colleges have gone out of existence. The remaining veterinary colleges, nineteen (19) in number, with some notable exceptions, are not carrying out their work in such a manner as to be entirely above criticism.

However, special mention will not be made in this report of any particular schools with the exception of the two located in the District of Columbia. One of these institutions (the U. S. College of Veterinary Surgeons) was discredited at the 1917 meeting of this Association and had applied to the Committee for a reconsideration of their case. In view of this request a rather thorough investigation of the conditions surrounding veterinary training in the District was made by the Committee. The following facts were ascertained:

The United States College of Veterinary Surgeons has a reasonably good building and equipment for the operation of a school of veterinary medicine. The institution lacks, however, a resident dean and several competent instructors.

The George Washington University College of Veterinary Surgeons has inadequate facilities in buildings and equipment to give satisfactory instruction in the third and fourth year courses. It also lacks an adequate staff of competent veterinarians.

The war may further deplete the instructing staff of these two institutions. The fact that the ruling of the Secretary of Agriculture, preventing Bureau of Animal Industry veterinarians from assisting on the teaching staff of these institutions renders it practically impossible for them to maintain satisfactory corps of veterinary instructors at both colleges.

These facts prompt your Committee to recommend that the two schools be amalgamated, so that the students of the United States College may receive the laboratory courses at George Washington University and the George Washington students receive the use of the building and equipment of the United States College for their courses in anatomy, surgery and medicine.

In the absence of such a merger prior to the opening of the coming college year (1918) the Committee recommend that the United States College of Veterinary Surgeons be continued on the discredited list and that the George Washington College be automatically dropped from the list of colleges accredited by this Association.

The status of veterinary students in relation to the draft laws became an important question for consideration by your Committee. A conference was arranged with the War Department and the Bureau of Animal Industry in order to obtain uniform matriculation requirements for students entering all veterinary colleges. As a result of this conference the following regulations were adopted:

1. The matriculation requirements which shall be adopted by each accredited veterinary college for the year 1918 shall be at least two years of high school education of at least 7 credits (units) or their equivalent as certified by the Commissioner of Education or a similar official in the state where the student resides.

2. For the year 1919 the entrance requirement shall be at least 3 years of high school education and for the year 1920 the full 4 year high school course of 14 units shall be required.

Major Arnold of the Sanitary Corps notified the various colleges of this ruling. The United States Civil Service Commission adopted these regulations for all future appointments to the United States Bureau of Animal Industry Service.

The adoption of these regulations is the greatest step in advance ever made by this Association for higher veterinary education. They will be of great assistance to the Committee on Intelligence and Education, eliminating a vast amount of work in the examination of entrance qualifications, thus enabling the Committee to spend all of its time in investigation of the various courses of instruction, methods of teaching and the equipment of the various veterinary colleges.

Your Committee therefore recommends that the amendment to the constitution and by-laws offered by Major Kline at the 1917

meeting be modified to conform to paragraph 1 of these regulations, and that a full four-year high school course of at least fourteen units be the requirement for admission to accredited veterinary colleges in 1919, and that the amendment thus modified be referred to the Executive Board with a respectful request for immediate action.

The Committee recommends that a special committee be appointed by the President and to continue until their work is completed to compile a history of veterinary science and education in America. Your Committee would suggest a committee of five, one from the Army Service, one from the Bureau of Animal Industry, one from the practicing veterinarians, one from Canada and one at large.

Respectfully submitted,

Committee on Intelligence and Education.

GEO. W. DUNPHY, Chairman.

J. A. KIERNAN.

GEO. H. HART.

R. C. MOORE.

CASSIUS WAY, Secretary.

The Committee on Intelligence and Education have approved and submit the following:

We, the undersigned, hereby propose the name of Mr. E. S. Bayard, Editor of the National Stockman and Farmer, Pittsburg, Pa., for honorary membership in this Association. Mr. Bayard is one of the leading animal husbandry men in this country. As a member of the Board of Trustees of the Pennsylvania State College and editor of one of the leading live stock journals in this country, he is thoroughly familiar with all live stock industry questions. He has assisted in every possible way as a writer, public speaker and consultant in planning and enforcing the federal and state live stock sanitary laws. In the last outbreak of foot and mouth disease he was among the first to endorse and one of the strongest supporters of the plans adopted for the suppression and eradication of this disease. He loyally supported the Government in this work, doing so at the sacrifice of many lifelong and influential friends who held opposite views.

(Signed) C. J. MARSHALL.

S. H. GILLILAND.

J. R. MOHLER.

The Committee on Intelligence and Education have approved and submit the following:

We, the undersigned, hereby propose the name of John J. Ferguson, of Chicago, for honorary membership in this Association. For several years Mr. Ferguson was Secretary-Treasurer of the United States Live Stock Sanitary Association and largely through his efforts and efficient administration of that office the Association has grown to be a powerful factor for better things in live stock sanitary control work. He is a staunch supporter and friend of the veterinarian, and for years has taken an interest in the work of this Association. His ability in animal husbandry work and his keen interest, appreciation and knowledge of problems of sanitation, pre-eminently qualify him for honorary membership in this Association.

S. H. WARD.

N. S. MAYO.

CASSIUS WAY.

SECRETARY'S OFFICE.

At the meeting of the Executive Board in Philadelphia the desire was expressed that the Secretary should send something for the Journal each month. A number of items have been forwarded already and appear elsewhere in this issue.

The material and records of the Secretary's office were turned over to me on September 5, and three of us have been busy getting things posted up. This is the busy season in the Secretary's office, as most of the members are sending in their dues, and it is hoped that all will do so promptly, so that it will not be necessary to send out many "second notices."

Miss Green, who has assisted Dr. Day, Acting Secretary, is also assisting with the work. She was familiar with the details of the office, and this is of much importance. A change has been made, so that numbered receipts for dues are now sent out. Should any error occur, this method facilitates tracing the matter, as we have the duplicate numbered stub on file.

Now that the finances are checked up, letters and membership cards are being sent out to the more than one thousand new members that joined the Association at Philadelphia. As new applications are received, receipts for the remittance and card, stating that the doctor has filed a proper application, are sent to him. His subscription is also entered for the Journal to begin

at once. Many members, and particularly those in the army, are changing their locations. Be sure and notify either the editor of the Journal or the Secretary of your change of address, so that your mail and Journal will reach you.

We are now making out the list of members in Districts No. 2 and No. 3 in order to send out postal cards for nominations for members of the Executive Board. It is desired to have the new members elected in time to attend the next meeting of the Executive Board, which will probably be held in Chicago about the first of December.

At the present, the only list of members we have is arranged alphabetically. A new and complete card index file by states will be made at once in order to handle business that pertains to districts.

The Secretary will give all correspondence prompt and courteous attention. If a mistake has been made or something is not clear, we will do our best to correct the matter.

Every member of the Association should feel that the Association and the Journal are his, and take an active part in making both more efficient in promoting the interests of the profession. Send to the Editor of the Journal brief practical items that come up in your daily practice, and also personal news items. These add much to the value of the Journal, for they are the things the average member wants to know. Don't forget to get a new member for the Association during the year. We will send application blanks upon request.

"Do your bit."

N. S. MAYO, Secretary.

OTHER ASSOCIATIONS.

GEORGIA STATE VETERINARY ASSOCIATION.

The Georgia State Veterinary Association will hold its twelfth annual meeting in the Senate Chamber, Atlanta, Ga., October 16 and 17, 1918.

H. C. HUTCHENS, President.

CHICAGO VETERINARY ASSOCIATION.

The first fall meeting of the Chicago Veterinary Association was held on September 10. No formal program was presented. Drs. Campbell, Quitman, White and Mayo reported upon the A. V. M. A. meeting in Philadelphia.

Some unusual and ridiculous incidents in veterinary practice were related. Dr. John Jaffrey told of a severe case of tetanus in a horse. The owner insisted that the horse be treated by placing a board on the horse's head and hitting it with a sledgehammer. As Dr. Jaffrey refused to treat him in this manner, the owner paid a big blacksmith two dollars to hit the horse. The blow killed the horse instantly.

Dr. Jas. Robertson told of a small boy who brought a puppy to his office to get the doctor to "bite the dog's tail off." The doctor also reported a case where a horse fell into a cellar while at work on an excavation. As the horse was somewhat lame, it was brought several blocks to the doctor's office. It was found that the leg was fractured, but the bones were not displaced until an assistant took up the foot. This horse had walked several blocks, the fractured bones having been held in place by the periosteum.

N. S. M.

THE WEST VIRGINIA VETERINARY MEDICAL ASSOCIATION.

This Association held its thirtieth annual meeting at Parkersburg, W. Va., July 17 and 18, with a large attendance present.

The election of officers for the ensuing year resulted in the re-election of Dr. J. J. Cranwell, of Clarksburg, as President, and Dr. Ernest Layne, of Huntington, as Secretary. Dr. J. C. Callender, of Parkersburg, was elected to the office of Vice President.

Nine new members were admitted to membership, they having passed a satisfactory examination before the State Board on the previous day.

Several very interesting clinics were held at Dr. Callender's hospital. Numerous papers on subjects of vital importance were also discussed.

Hon. J. H. Stewart, Commissioner of Agriculture, was present and some important steps were taken to improve the usefulness of his office, both to the laity and the veterinary profession in the state.

A very elegant banquet was served at the Chancellor Hotel at the close of the session.

ERNEST LANE, Secretary.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS.

TO THE OFFICERS AND MEMBERS:

The semi-annual dues (per capita tax) of all members of this Association for the term of six months ending February 28, 1919, are now due at the rate of \$1.50 for each member. In this connection I respectfully quote the following extracts from our national constitution as adopted at the Philadelphia convention:

ART. 5, SEC. 2. The representation of any Association at the national convention shall be based on the average amount of per capita tax paid by that Association during the fiscal year.

ART. 10, SEC. 1. The fiscal year of this body shall begin on September 1 and end on the last day of the month of February.

ART. 10, SEC. 2. The per capita tax to cover the expenses of this Association shall be \$3.00 per annum and shall be collected from all active members by the State, Divisional and District Associations, and by them remitted to the National Secretary. Members-at-large shall remit per capita tax direct to the National Secretary. This tax may be paid semi-annually."

All drafts, exchanges, postoffice or express money orders should be made payable to Dr. S. J. Walkley, Secretary, 185 Northwestern Avenue, Milwaukee, Wisconsin.

Copies of minutes of proceedings of our Philadelphia convention, and copies of our national constitution and by-laws, as adopted at that meeting, will be distributed from this office as early as possible. State, Divisional and District Secretaries will please advise how many copies of those documents are needed. Each member of our Association is entitled to one copy of each and one copy of each should be sent to all B. A. I. veterinarians in your district who are non-members, with an invitation to join our ranks.

We are very fortunate in having completed the work at the Philadelphia convention of linking various State, Divisional and District Associations, and forming the National Association. In the absence of a national body, one State would be working for a certain salary schedule, while other States would be working along entirely different lines. The result would be chaos and confusion, with much wasted effort. Through the National Association we are assured unanimity of action through co-ordination of the efforts of the various Associations, composed of veterinarians in all branches of the Bureau service. In other words, there will be just one classification bill introduced in Congress affecting B. A. I. veterinarians, and each of the 1600 B. A. I. veterinarians will be boosting that bill. We could never expect

the enactment of a bill standardizing our salaries except through organized efforts, national in scope. The classification bill will be introduced in Congress as early as possible.

This organization is founded on sound principles and deserves the full support of each and every veterinarian in the Bureau service, more than 700 of whom were represented at our Philadelphia convention. All officers and members are urged to correspond with their colleagues in unorganized territory, urging them to enlist in this movement. Considerable correspondence has already been received in this office showing that our colleagues in different sections of the country appreciate the work we accomplished at the Philadelphia convention.

S. J. WALKLEY, Secretary.

NECROLOGICAL.

DR. WARD F. ROWLAND.

The following notice has been sent to the Journal by Dr. Leslie M. Hurt, Pasadena, California:

"Dr. Ward B. Rowland, a well-known resident of Pasadena for over thirty years, died at his home on Saturday evening after a prolonged illness. Dr. Rowland was Assistant State Veterinarian and had the Southern California counties as his jurisdiction. He is survived by his widow and one daughter, Mrs. Arnold Praeger of this city, and a brother, Dr. F. F. Rowland of Pasadena. The funeral service will be held from his home, 408 South Marengo avenue, on Tuesday afternoon, at 2:30 o'clock, and will be private.

Dr. Rowland was in his sixtieth year and was born in Media, Pennsylvania. He studied veterinary medicine in New York City under Dr. Liautard, a noted French veterinarian, and began his practice in Wilmington, Delaware. He built up a large practice there, and had charge of the horses in the stables of the Du Pont Powder Works.

In 1888 Dr. Rowland came to California and located at Pasadena. In those days there was a large number of horses and cattle in this vicinity. In one of the epidemics of glanders that swept through Southern California, Dr. Rowland became infected and poisoned his arm. He nearly died from the effects of the poison in his system, and felt the effects of it all his life.

Dr. Rowland had been active in Republican political circles and was well known in political affairs of the state. For nearly ten years he assisted the State Veterinarian, having charge of the work in the Southern California counties. For several years Dr. Rowland was in failing health.—Pasadena Star-News, Sept. 2.

REVIEWS.

THE CONSERVATION OF FOOD ENERGY.

HENRY P. ARMSBY, Ph.D., L.L.D., Director of the Institute of Animal Nutrition of the Pennsylvania State College, Expert in Animal Nutrition, United States Department of Agriculture. (12mo of 65 pages; cloth, \$0.75 net. Publishers, W. B. Saunders Company, Philadelphia and London, 1918.)

Dr. Armsby has been so long and favorably known as an investigator in the field of Animal Nutrition that anything on the subject coming from his pen is at once received as bearing the stamp of authenticity.

The little work under review is a *multum in parvo* of valuable information concerning the conservation of food energy which Dr. Armsby has accumulated during his many years of research work. To use a part of his own foreword, he submits the little work in the belief that the accumulated results of the researches in his own laboratory, as well as others, are capable of useful application, and should if possible be made of service in the present food situation.

Some idea of the many phases of the subject treated may be had by mentioning the different divisions or chapters:

Chap. (1) The Measure of Food Values; (2) Energy in Human Foods; (3) The Efficiency of the Animal; (4) Food Value of Increase by Animal; (5) The Overhead Feed Cost; (6) Wheat; (7) Corn; (8) Barley; (9) Rye; (10) Oats, Rice, Buckwheat; (11) Cottonseed; (12) Peanuts; (13) Milk; and (14) Summary.

Each chapter has its subdivisions, thereby amplifying the main divisions, rendering the subject-matter easily understood, and forming most interesting reading to anyone who is at all familiar with animal nutrition, which every member of the veterinary profession should be. We have no hesitation in heartily recommending this little book as a valuable contribution on the

subject, and which we believe should find a place in every veterinarian's library. The well-known publishers have executed their part in their usual excellent style.

W. H. D.

MISCELLANEOUS.

SAYS DISEASED COWS WERE FED TO THE BOYS.

That diseased cows were killed at the Essex County Training School for Boys and fed to the inmates was charged this morning at the meeting of the Board of Health.

The matter was brought to a head when Dr. John F. Winchester, inspector of slaughtering and a veterinary in the city's service, complained that a letter written by him to H. C. Lithgoe, State Commissioner of Foods and Drugs, about the alleged breach of the slaughtering and health laws of the training school, was ignored. A copy of the letter to Mr. Lithgoe, sent to the County Commissioners, also remained unanswered.

The Board voted to call this breach of official etiquette, together with the alleged conditions at the training school, to the attention of Dr. Eugene R. Kelley, State Commissioner of the Health Department, and asked if the case merited official cognizance.

From the minutes of the meeting today it was gleaned that a former employee of the training school reported that diseased cattle were killed at the training school farm and fed to the boys. The Superintendent admitted killing cattle that were "under suspicion for disease." He did not relish the idea of the local health authorities interfering, and told the Superintendent of Sanitation and the Chairman of the Board of Health that his institution was under the jurisdiction of the county authorities. He readily agreed, however, that he would not kill any more cattle for food or for sale without complying with the state and city slaughtering laws regarding the inspection of the carcass.

This all happened July 31 and August 1, but it only reached the public prints very recently.

The Board voted to write the County Commissioners urging them to instruct the local training school officials to cease slaughtering calves, cows or pigs unless the city or state slaughtering inspectors were present.

Dr. William J. Sullivan said he did not believe that this would prove effective, as he had issued a similar warning in 1910 after some swine, not duly inspected and branded, had been sold to a local market.—Lawrence (Mass.) Press.

CONFERENCE ON TICK ERADICATION.

At a conference on tick eradication, by the employees of the Bureau of Animal Industry in Louisiana, held in New Orleans on September 21, the following list of interesting subjects was presented:

Address, Hon. John M. Parker, U. S. Food Administrator for Louisiana.

Address, "Necessity of Late Dipping," Dr. Edward Horstman, Baton Rouge, La.

Address, "Alabama Methods of Enforcing Late Dipping," Dr. R. E. Jackson, Inspector in Charge, Birmingham, Ala.

Address, Dr. E. Pegram Flower, Secretary and Executive Officer, Louisiana State Live Stock Sanitary Board.

Address, Dr. W. H. Dalrymple, Professor of Veterinary Science, Louisiana State University, and Veterinarian State Experiment Stations.

Address, "How to Manage Ticky Herds After October 1 in Territory to be Released December 1," Dr. J. A. Barger, Inspector in Charge, Jackson, Miss.

Address, "My Tactics Used in Handling Tick Eradication in New Territory, With View of Holding Coöperation Until the Last Tick Has Vanished," Dr. G. E. Ellis, Natchitoches, La.

Address, "The Relation of Law and Coöperation in the Beginning and Final Work of Tick Eradication," Dr. J. B. Reidy, Inspector in Charge, Houston, Texas.

PRESENTATION OF PORTRAITS.

An extremely interesting feature of the recent A. V. M. A. convention was the presentation, by Dr. R. F. Eagle of Wilson & Co., Chicago, of portraits in oils of the late Dr. D. E. Salmon and Dr. A. D. Melvin, former chiefs of the Bureau of Animal Indus-

try, and the present incumbent, Dr. J. R. Mohler, which are to occupy places in the portrait gallery of the Saddle and Sirloin Club. This mark of appreciation of the veterinary profession by the live stock interests, and the close intimacy between the two which this graceful act emphasizes, is said to have made a deep impression on the members of the National Veterinary Association.—From the *Breeder's Gazette*.

TICKS "ON THE RUN" IN LOUISIANA.

According to Dr. E. I. Smith, B. A. I., in charge of tick eradication in Louisiana, the total number of cattle dippings in August were 2,113,386; 84,461 horses and mules were inspected, and 32,188 were dipped.

About 5,000 dipping vats are available, or in operation, in Louisiana, in which 10,518,087 dippings have taken place, under Federal supervision, from March 15, 1918, to September 1, 1918. This has reduced the tick infestation in the State to one-tenth what it was at the commencement of the work in April, 1918.

—Dr. R. J. W. Briggs has been transferred from Iowa Falls, Iowa, to Baton Rouge, Louisiana, as Inspector in Charge of Hog Cholera work in the Pelican State.

—Dr. C. M. McCoy, B. A. I., has been transferred from Baton Rouge, Louisiana, to Denver, Colorado.

—Dr. W. M. Tucker has been transferred to Louisiana to engage in tuberculosis eradication in that State. Before his transference, the Doctor had been working from the B. A. I. office in Washington.

Dr. James E. Anderson has removed from Ligonier to Angola, Ind.

Dr. A. H. Julien has removed from Camilla, Ga., to 802 Bellows Avenue, Columbus, O.

Dr. H. T. D. Lackie has removed from Omaha, Neb., to Willow City, N. D.

Dr. Percy Lamb, formerly of Worting, England, is now located at 630 W. Hampden, Englewood, Colo.

Dr. Robert Boyd of San Francisco, Cal., is now Chief Meat Inspector at Stockton, Cal.

Dr. F. E. Boyd has removed from Columbia, Pa., to 652 Jersey Avenue, Jersey City, N. J.

Dr. J. J. Frey has removed from Sacramento to Placer-ville, Cal.

Dr. R. J. W. Briggs, who has been connected with the force of Dr. J. S. Koen of Des Moines, Iowa, has been transferred to inspector in charge of hog cholera work in Louisiana, and is stationed at Baton Rouge, La.

Dr. Harry Dell has been transferred from Chicago, Ill., to B. A. I., Box 236, Dubuque, Iowa.

Dr. R. C. Surface has severed his connection as veterinary inspector on tick eradication for B. A. I. to engage in private practice at Altamont, Mo.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF AUGUST 24, 1912, OF THE JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION (FORMERLY THE AMERICAN VETERINARY REVIEW), FOR OCTOBER 1, 1918:

Editor—W. H. Dalrymple, Baton Rouge, La.

Managing Editor—None.

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Publisher—American Veterinary Medical Association.

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Known bondholders, mortgagees and other security-holders, holding 1 per cent or more of total amount of bonds, mortgages or other securities—None.

W. H. DALRYMPLE, Editor.

Sworn to and subscribed before me this 17th day of September, 1918.

ALBERT LIGON, Notary Public.

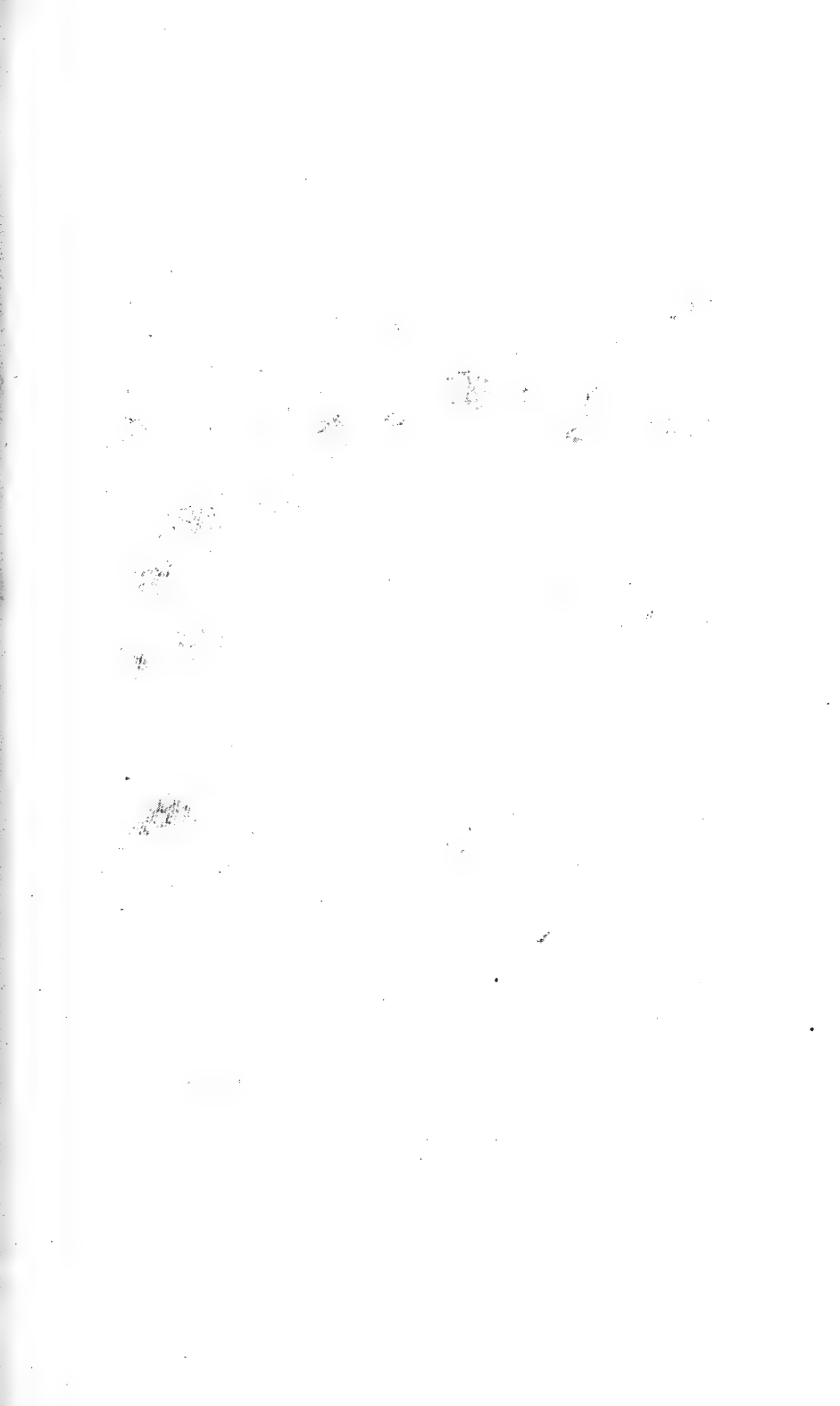
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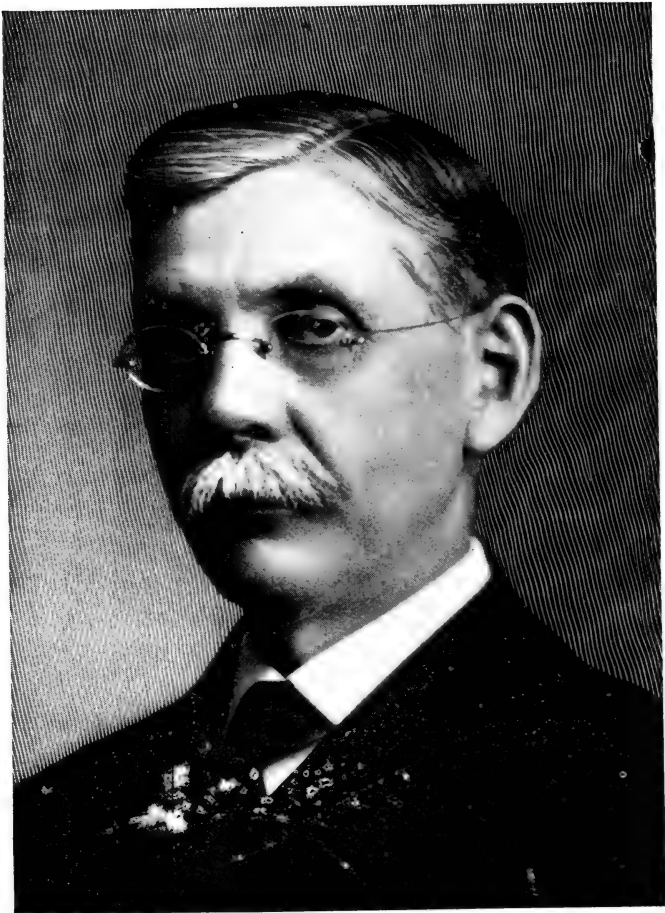
(My commission expires March 4, 1921)

THE TIME

*to subscribe for the Journal
of the A. V. M. A.*

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DR. VERANUS A. MOORE
President American Veterinary Medical Association

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW
(Original Official Organ U. S. Vet. Med. Ass'n)

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V. A. MOORE, President, Ithaca, N. Y. N. S. MAYO, Secretary, Chicago.
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The American Veterinary Medical Association is not responsible for views or statements published in the JOURNAL, outside of its own authorized actions.

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NOVEMBER, 1918.

No. 2.

OUR NEW PRESIDENT.

Dr. Veranus A. Moore, President of the American Veterinary Medical Association, was born and raised in central New York. His father died when Dr. Moore was young, and he became the main support of the family. During his boyhood he met with an accident which crippled him for years, yet, in spite of adversities, and by his own efforts, he succeeded in obtaining an education under circumstances that would have disheartened many. After graduating from Cornell University in 1887, where he studied under Professor James Law, he entered the Bureau of Animal Industry under Dr. D. E. Salmon, and became Chief of the Division of Pathology and Bacteriology.

Dr. Moore's earlier work on hemorrhagic septicemia, tuberculosis, hog cholera, and other transmissible animal diseases is recorded in the publications of the Bureau, and proved him to be one of the foremost investigators of diseases of this class.

When the New York State Veterinary College, at Cornell University, was opened in 1896, Dr. Moore was called to be Professor of Comparative Pathology, Bacteriology and Meat Inspection. His successes as a research worker, teacher, and executive were such that, in 1908, he was appointed Dean and Director of the College.

Dr. Moore, while a fearless, independent, scientific worker, is, withal, an extremely modest man with broad human sympathies. No one has ever gone to him for help or cheer and has been disappointed. He is a leader in preventive medicine, a trained scholar and scientist, an inspiring teacher, and sympathetic friend and gentleman. The A. V. M. A. may well be proud of its new President.

N. S. M.

ON GUARD.

General disorganization occasioned by war has always had its sequel in the spread of diseases of one kind or another, both in human and animal kind, and calls for greater vigilance in order to prevent the introduction, at this time, of the infection of the more rapidly spreading forms from the war-stricken countries of Europe, more particularly, of course, those affecting the domesticated animals with which we have to deal. All of us must still have the most vivid recollection of the widely devastating effects the last outbreak of foot-and-mouth disease produced in this country, and we should be on guard to meet any possible emergency that might arise as the result of disorganized conditions across the Atlantic. It has already been announced over the cables that an outbreak of foot-and-mouth disease has occurred in England, and our worthy Chief of the Bureau of Animal Industry, in order to forewarn, which is to forearm, has issued a statement, which may be found in another part of the Journal, advising close watch, on the part of everyone, against this dread malady. It is sincerely to be hoped that this country may be spared another invasion of this infection, but, owing to war conditions, and the absolute necessity for more or less intimate communication through the transportation of men and material, besides the reduction in the number of veterinary officers engaged in Bureau work, it is scarcely possible to maintain the rigid measures for protection which obtain during normal times. Consequently, it should behoove everyone—officials, practicing veterinarians, and stock owners—to be strictly on guard and report to the proper authorities any cases that might appear suspicious, so that the very first cases may be at once discovered and the spread of the disease prevented. This is most important, as it would be a calamity to this country if this disease should make its appearance under present conditions, and become permanently established here, as has been the case in many of the European coun-

tries. And while hoping for the best, let us do our best. Or, in other words, let us be strictly "on guard."

"I DONT KNOW."

Perhaps the most humiliating admission that a professional man thinks he can make, whether he may be trying to locate the seat of a lameness, or the exact nature of some contagious disease, with only an isolated case to go by, is, that he does not know. In fact, it takes a mighty "strong man" to make such an admission. And yet, in the long run, it pays to be honest in this respect, as there are but few reasonable clients who, if the admission is made in a tactful manner, would not respect the one making it much more than the man who happened to be in error after rendering a positive opinion, even though he, himself, knew full well that he was in doubt.

How often is it possible for the most serious results to follow the "positive," though mistaken, diagnosis in the case of a serious contagious disease. An error here may cause no end of trouble through the necessary sanitary precautions being neglected, with monetary loss to the owner, and loss of prestige to the professional man; and all through fear, or dislike, of having to make the admission, "I don't know." How much better to make the honest statement that the case had a suspicious resemblance to such and such a dangerous ailment, and, while a positive opinion was not at present possible, the case would be treated as a suspect, with all the necessary precautions taken, and further developments awaited. If it should turn out as suspected, the animal has been so placed that no harm can come from it; if, on the other hand, the suspicion should not be confirmed, neither can any harm result. How much more confidence must an owner place in the man with the straightforward, honest admission, but with the intelligent advice given, which may be the means of saving others of his animals, than in the one who has the impression that his reputation depends upon a hasty, or positive, opinion, whether right or wrong, and especially if untoward consequences should follow an erroneous diagnosis.

"Never be too quick in giving an opinion," was the advice given the writer, with others of his class, by one of the most noted of the older professors in one of the Scotch schools, and he has always found it valuable in after-life in his professional work.

We cannot but feel that many young practitioners, and per-

haps some of the older ones as well, may prejudice their prospects by entertaining the idea that they must be "know-alls," and that it is unmanly for them to admit they "don't know." Of course, the man of the "lightning diagnostician" type appears extremely smart, and may be lucky enough to make a favorable impression for a time, or until his "day of reckoning" comes, and he is found out. But the man who will more likely gain the esteem of his clients, and merit their confidence, is he who, in doubtful cases, has courage enough to admit his doubt, rather than try to impress his client with his remarkable superiority (?) as a diagnostician.

We are of the opinion that the practitioner, young or old, who would follow the advice of the old Scotch professor would, in the end, be more successful himself, and through his straightforwardness in expressing his opinion, be much more respected by the clientele on whom he is dependent for his living.

"MAKING BRICKS WITHOUT STRAW."

We are told that in ancient times Pharaoh commanded the taskmasters of the people to notify the latter that no more straw would be given them wherewith to make brick, but that they should go and gather it for themselves; and, at the same time, none of their work was to be diminished. Or, in other words, the time occupied in searching for straw was not to be reckoned as time off from their regular work of brick-making.

To make a good brick in those bygone days, straw was evidently a necessity; and it is also evident that the Egyptian potentate was determined, as a task or hardship, to place as much difficulty as possible in the way of his people making a first-class article of that particular variety of building material. In fact, the task he demanded was tantamount to an impossibility, or, to say the least, was the height of unreasonableness, and an extremely hard proposition to present to those people. And yet we believe the inference might possibly be made to apply to other lines of endeavor besides brick-making. In endeavoring to erect a "journalistic edifice" worthy our Association, in keeping with our ever-increasing membership, and commensurate to the advancement of the science and art of our profession, the "builder" must be adequately supplied with building material—he must have "bricks." And as our "structure" is composed of different sections, he requires different varieties of "bricks" in order to give the whole a "useful and attractive finish."

It should be remembered that the veterinary profession is composed of members engaged in different branches, and if we are to succeed in catering to each and all, we must look not only after the research worker, but we must also try to meet the wishes, and needs, of the everyday practitioner, who, while he may be interested in the more scientific branches, so to speak, is more vitally so, in recorded cases similar to those he is meeting with, day after day, in his own practice; and if the "builder" is short in any one material in the erection of his "monthly edifice" it is that in which the practitioner is more particularly interested, viz., clinical and case reports. And yet it is the practitioner, himself, who has to be depended upon to supply the "bricks" to interest his fellow practitioner and help him along in his daily routine of work. Wont our friends in practice—and we may extend the invitation to workers in all of the departments—supply more material to help make the Journal of more general interest? We, unfortunately, like the Egyptian slaves of old, cannot "make bricks without straw."

PLEASE NOTE CAREFULLY.

Annual dues from members of the A. V. M. A. should go to the Secretary in Chicago, while subscriptions to The Journal from non-members should come to the Editor at Baton Rouge, La.—Ed.

Dr. C. L. Holt has been transferred from the work of tick eradication, Washington, D. C., to such work in Baton Rouge, La.

Dr. J. B. Reidy, Inspector in Charge of tick eradication, Houston, Texas, just returned from Ithaca, N. Y., where he has been spending a few weeks' vacation with his home folks.

Drs. E. B. Haskins and Elmer Lash, traveling inspectors in tick eradication, Jackson, Miss., have successfully passed examinations for commissions in the Veterinary Medical Corps and are now ready to be called into the service.

Dr. Frank J. Friel, formerly of Frackville, Pa., has become associated with the Lederle Antitoxin Laboratories.

SWINE PRACTICE.*

C. COURTNEY MCLEAN, Meadville, Pa.

Swine—undoubtedly the most naturally intelligent and the cleverest of any of our domestic animals, the animal that can only be fooled once, and the animal that can find its way home even when removed as young as four weeks—are still the most abused and neglected of any of the members of the animal kingdom. They have been abused since the beginning of Biblical history; only too frequently kept in an abominable environment; ordinarily fed the refuse from every source, even being asked to subsist on the undigested waste in the feces of cattle, the vilest of decomposing slaughter offal, or garbage that no other living creature would even look at or taste; yet its wonderful digestive system and rugged constitution permits it to transform any of these forms of diet into healthy, nourishing food.

It is this wonderful ability to convert waste into gold, as well as the smallest share of the granary contents, by the quickest route to the meat barrel, combined with their great prolificacy, being capable of a 2,000% annual increase when the sows are bred semi-annually, and the fact that pigs are usually ready for market at six months of age weighing from 200 to 250 pounds, that caused our food administrator, Mr. Herbert C. Hoover, to instigate a nation-wide campaign last year for a greater swine production. As a result of this campaign many patriotic cities repealed ordinances which forbade the raising of pigs within their respective limits, thereby enabling many of their citizens to raise their own pork. The most marked increase in the pork production, however, has been due to the efforts of the farmer, which is shown by the fact that on January 1, 1918, there were approximately 71,374,000 hogs on the farms in this country, in contrast to 67,453,000 on January 1, 1917, or an increase of 3,921,000 in one year. This year the food administration has asked for an increase of 15% in the hog production over last year. While I have no more recent figures than April 1, 1918, when it was estimated that there had been an increase of 9½% over the number of hogs in this country at the same time last year, I feel safe in saying that this desired increase will not only be met, but

* Presented at Section on General Practice, A. V. M. A., Philadelphia, 1918.

even surpassed, and that the statement recently made in London by our food administrator to the effect that the immense extra stores of meat needed to feed the United States and the Allies would be forthcoming through our pork-producing channels will become an assured fact.

According to the general laws of economics, an increase in production of anything usually causes a decrease in its valuation, but, due to the present price of feed, labor, etc., such has not been the case with the hog. On the contrary, a very marked increase in their valuation has been the rule, until, at the present time, the price of hogs on our live stock markets is the highest it has been since the Civil War, making the valuation of the hogs in this country today about \$1,500,000,000.

With such a vast number of hogs in this country and such an enormous amount of capital invested in them, may I point out to you as veterinarians the responsibility which rests upon your shoulders and mine in protecting this great industry? Not only in protecting it from the various epizootic diseases, as hog cholera, tuberculosis, necrobacillosis, etc., in the control of which we as a profession have made such marked progress within the past few years, but in that broader field known as general practice.

Prior to this past year, possibly because of the previous low valuation of the hog, along with a lack of knowledge and technique on our part as a result of the most of our veterinary schools not having the proper facilities to give a complete and thorough course in general hog practice (and perhaps it may also be due to an indisposition on the part of some of us), I feel that this field has been somewhat neglected by our profession. The result of this seeming neglect on our part has been that the field of hog medication has been left largely to either the owner himself or some kind and willing neighbor endowed with a vast turpentine knowledge of medication.

With the present high price of pork, which no doubt will remain for some time, and the increasing tendency toward pure-bred stock, it should be profitable for the American farmer to employ skilled service for the care and treatment of his porcine possessions, and he should look to our profession for this service. We at the same time should be in a position to give this service, not only as an aid to the swine industry, but, if I might suggest, as a means of recouping some of the loss we have suffered from mechanical devices. Therefore, I thought that it might be of interest and value to some of you if I should relate briefly some

of the things that I have found of value to me in general swine practice.

Hog House.—Size, location, construction; light, ventilation; warmth, bedding.

Yard.—Size, fence, pasture; water, wallow; trees, shade.

Boar.—Care, handling, exercise; feed, condition, skin, oiling; breeding, age.

Sows.—Feed, care, gentle handling, “Queen of the Farm;” breeding age; weaning pigs.

Farrowing.—Isolated place; farrowing rail; bedding; presence or absolute letting alone; feeding; aid in dystokia, pituitrin, forceps; Cæsarian section.

Pigs.—Bedding, feeding; fed in place that sow cannot get at; simple castration, cryptorchid, hernia; separating sows.

Medication.—Lice, mange, skin troubles; diarrhœa, constipation, worms; hypodermic medication; garbage poisoning.

Time is insufficient to deal with this subject as I think it should be dealt with, but I hope from what I have been able to offer on this subject that all of you may gain some benefit and be of more assistance to the American pig in its campaign to help our soldiers and the Allies to whip the German human hog.

AVIAN TUBERCULOSIS IN SWINE.*

By L. ENOS DAY, V. S.,

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The question of tuberculosis has been studied by investigators for a great many years, and is without doubt one of the oldest diseases of which we have any history, ranking in seniority perhaps with leprosy and syphilis. In more recent years I believe this disease has attracted more attention and interest than any other disease.

Since the discovery of the causative agent of the disease, extensive research work has been done with reference to the virulence, morphology and cultural characteristics of the organism, with valuable results. This work has shown conclusively that there are at least three, and possibly four, distinct types of organisms which can be distinguished and designated according to type. The type that I wish to deal with in this brief report is the Avian type. This type has been considered by workers to be

* Presented at Section General Practice, A. V. M. A., Philadelphia, 1918.

closely confined to fowls, and probably saprophitic in nature in other soil. This view seemed to be quite universal until 1909. During this year, Mohler and Washburn¹ successfully infected swine and other mammals experimentally. At this time they also pointed out the danger of allowing swine to devour carcasses or parts of carcasses of fowls affected with tuberculosis. In 1915, M. Christiansen² reported several observations of Avian tuberculosis in swine, which were received at the Berlin municipal abattoir. A few years previous to Christiansen's report, Avian tuberculosis in swine had been reported on several occasions by European writers.³

For the past eight years the writer's attention has been called by veterinary inspectors working on the killing floors of various packing establishments at Chicago, Illinois, to certain lesions resembling tuberculosis, in the skin and body lymph nodes of swine. In some instances, acid-fast organisms were readily demonstrated, while in others it was difficult to demonstrate such organisms. At first the organisms were thought to be tubercle bacilli of the bovine type, but owing to the length of the organisms some doubt was entertained.

In March, 1912, some body lymph nodes were received from the Inspector in Charge at Cudahy, Wisconsin. The lesions appeared tuberculous. On microscopic examination, no tubercle bacilli were demonstrated. Some of the material was sown on glycerin agar agar, to which 5% of sterile ox gall had been added. In the course of eight or ten days, a slight growth was appearing, and in two weeks it was quite heavy and showed the characteristic wrinkling of cultures of tubercle bacilli. Microscopic examination showed it to be a pure culture of acid-fast bacilli slightly longer than the bovine type. Both guinea pigs and rabbits and two hogs were injected subcutaneously from this culture. The rabbits and guinea pigs were sacrificed two months after inoculation, with negative results. The hogs died of cholera soon after inoculation. Subsequently, a young puppy and a kitten were inoculated subcutaneously; also a sheep and another pig were inoculated intravenously with the same culture, all with negative results, with the exception of a small abscess at the point of injection in the puppy and kitten. These abscesses subsided after two or three weeks.

Since the organisms grew so readily on the culture medium above referred to, and none of the experimental animals showed lesions of tuberculosis on postmortem, although they were allowed

to live for two months or more after inoculation before they were sacrificed for examination, I felt quite sure that I was not dealing with tubercle bacilli of the bovine type. It has long been recognized that the bacilli of the Avian type, in comparison with those of the bovine type, are distinguished by their low virulence to guinea pigs, and their peculiar moist fatty as well as rapid growth on solid as well as in liquid media. However, owing to the pressure of other duties, the experiments rested at this point for a time.

In May, 1914, specimens of skin and body lymph nodes from a hog of medium size were received from one of the Chicago packing establishments. Many long, beaded acid-fast bacilli were found in smears prepared from the lymph nodes of the animal. Portions of the lymph nodes were ground fine in normal salt solution and injected both subcutaneously and into the skin on the back of a hog about four months old. On September 5, 1914, this animal was slaughtered. For the first two months after inoculation the animal grew rapidly. After that it did not grow so well, and at the time of slaughter it was not in a good growing condition, having lost some in weight. On postmortem, at the point where the injection was made into the skin, the skin over an area of one and one-half inches long and one inch wide was thickened to about one-half inch, and showed many small necrotic foci. Many small necrotic foci were also found in the mesenteric lymph nodes and in the lungs. The largest foci in the lungs were 6 mm. in diameter. Slides prepared from these foci contained a large number of long, beaded acid-fast bacilli.

Two young roosters were inoculated from the lesion in the skin and lungs of the hog in the following manner: Several necrotic areas of the skin and lungs were carefully removed and ground fine in sterile normal salt solution. One-half cubic centimeter of the suspension was injected intraperitoneally into one of the roosters; the other received one-half cubic centimeter into the wing vein. The chickens grew well and were sacrificed five months afterwards. On postmortem several nodules were found which ranged in size from 1 to 3 mm. in each of the livers. The lungs and other organs appeared normal. Slides prepared from the nodules in the liver contained a large number of beaded acid-fast bacilli. But again, owing to other duties which called me away from the laboratory for an indefinite period, further cultures and inoculations could not be made; and the experiment was abandoned at this time.

In the cases that I have observed in swine, the lesions are usually confined to the skin and body lymph nodes. The skin extending over the back and sides is the location usually involved. The most common lymph nodes involved are the superficial inguinal, and the preapular comes next in order. I have seen only one case of natural infection in which the mesenteric lymph nodes were involved, and one case in which the lesions had extended to the lungs. I have not observed lesions in the liver.

According to Christiansen's report, the lesions mentioned by him in the nine cases which he studied were distributed as follows: In six cases lesions were found in the lungs, liver and mesenteric lymph nodes. In one of these cases the spleen was also involved. In three cases the liver alone was mentioned; one of these showed spleen involvement. He does not mention any case in which the skin or body lymph nodes were involved.

The extent of the lesions in the skin depend largely upon the length of the time during which the animal has been injected. In some cases which I have examined, entire back and upper part of the side was affected, while in other cases of more recent duration, the lesions were not so extensive, affecting only a portion of the back, shoulder or side. Such localized areas are only a few centimeters in diameter. The body lymph nodes contiguous to the skin lesions are always more or less changed.

The affected skin is thickened and quite firm and dirty or brownish-yellow in color, without an appreciable loss of hair. Upon incision, the skin will be found to be from two to four or five centimeters in thickness, with a slight increase of fibrous tissue which contains a large number of disseminated homogeneous, soft, fatty, white to yellowish-white tubercles, ranging in size from one millimeter to a centimeter or more in diameter. The tubercles are very oily and when incised leave a layer of grease on the knife. In some instances the tubercles are encapsulated, giving it the appearance of a cyst with a fatty content. Caseation and calcification does not take place readily, and is seen only in cases of long standing. Junach⁴ claims that caseation in Avian tuberculosis in swine does not occur.

The lesions in the lymph nodes are very much the same as those of the skin. The histological structure of the tuberculous process is much the same as that of bovine or human type, with the exception of the large amount of fat present. Giant cells are present, but not so frequently.

I have experienced no great difficulty in getting the bacilli to grow on ordinary plain agar agar or in nutrient beef broth. However, they grow better on glycerin agar agar with 5% of beef gall added.

Christiansen reports that out of fifty cases of local infection of the mesentery gland he found that thirty-five were affected with the fowl type. I have no data showing the exact per cent of this type of tuberculosis in swine in this country. While I do not believe it nearly so prevalent in this country as has been reported abroad, yet I believe it is more frequent than we suspect. Whether it appears as an epidemic in swine on farms where it is epidemic in fowls, I am unable to state. However, I believe that this point is worthy of consideration.

REFERENCES.

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- ² M. Christiansen, "Zeitschrift für Infektionskrankheiten," Vol. XVI, Part 4, Berlin, 1915.
- ³ "Zeitschrift für Infektionskrankheiten der Haustiere," Vol. XIV, page 323.
- ⁴ Junach, Zeitschrift für Fleisch und Milchhygiene," March 3, 1914.

THE BUREAU OF ANIMAL INDUSTRY AS A WAR AUXILIARY.*

JNO. R. MOHLER, Chief of the Bureau.

The natural tendency in time of war is to concentrate on military achievements. We have reason to be proud of our great resources, of our ability to supply food and other munitions of war to our allies, of the unprecedented record our country has made during the past fifteen months, of our army of over a million sturdy, well-equipped men now battling in France, of the valorous deeds of our soldiers and sailors; but when we divert our attention from the front it is realized that all of these splendid achievements were made possible only through the efforts of the civilian population behind the battle lines. The man who is producing grain, meats, wool, guns, shells, ships, or the man who is earnestly engaged in conserving live stock through the preven-

* Presented at 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

tion or cure of animal diseases, is probably contributing equally as valuable services to his country at this time as the soldier in the trenches. Strong as the temptation may be to wear the khaki, many of us must remain at home to produce and conserve the essential supplies of warfare, and it gives me much pleasure to refer to the patriotic, successful manner in which the civil as well as the military members of our profession are performing their duty.

The Bureau of Animal Industry endeavors to foster and improve the live stock industry and also to aid the consumer in procuring a wholesome supply of meat and dairy products. This work includes animal husbandry, dairying, meat inspection, and the study, prevention, and eradication of animal diseases.

The Bureau realizes fully the great necessity during the present national crisis of increasing live stock production not only for the purpose of obtaining more beef, more mutton, more pork, and more poultry, but also for the purpose of getting more butter, milk, cheese, eggs, hides, wool, and fats.

We are endeavoring in every way possible to conduct an educational propaganda to stimulate this increased production, and have systematized our various propaganda along two main lines. The first is through meetings, news articles, pamphlets, bulletins, etc., to encourage the live stock raiser to increase his herds and flocks, and the second is to assist the live stock raiser in conserving his live stock so far as possible after it has been produced, by aiding him in every way possible to keep his herds and flocks from becoming decimated by disease.

Therefore, the efforts that are being made to induce increased production of live stock are closely related to the control of animal diseases. It is estimated that the annual loss in the United States from such diseases amounts to the enormous sum of two hundred million dollars, or more, and it is believed that three-fourths of these losses are preventable. In the past our farmers have suffered, with equanimity, losses that from a national viewpoint are now more serious than ever before, and the Bureau is taking more energetic efforts than ever before to reduce the losses from these diseases.

The steady decrease in live stock production and the persistent increase in the cost of meats and other animal products for a number of years before the war were matters of universal concern, and various projects were pursued by the Bureau in co-operation with the states, looking to the stimulation of live stock

production and the prevention of losses from destructive disease. Much was accomplished by the methods employed and when the war storm broke upon us it was found that the established lines of work were suited to the needs as far as they went, but in order that a more vigorous and widely extended attack might be made on animal diseases and new projects undertaken to stimulate animal production and conservation, the Congress included in the Food Production Bill last August a sum to be used for such purposes in addition to the regular appropriation. The activities of the Bureau at this time are extensive and varied, but the following projects are especially important as war measures.

MEAT INSPECTION.

The importance of meat inspection as a public health measure, especially during war times, is too well established to require argument and explanation. Therefore, this discussion of the subject need not consist of more than a brief statement to show the scope and volume of the work done by the Bureau in its conduct of the Federal meat inspection service. The chief purpose of this service is to eliminate diseased or otherwise bad meats from the general food supply, to see that the preparation of meats and products passed for human consumption is cleanly and conducted under good, sanitary conditions, and to enforce the requirements as to honest labeling.

Under the authority conferred upon the Department by the Meat Inspection Act of June 30, 1906, the Bureau enforces a rigid supervision and inspection at the slaughtering and meat preparing plants which are engaged in interstate and foreign commerce. This inspection provides for not only an examination of the animal immediately before and directly after slaughter, but also for the supervision and inspection of all meats and products in the establishment through the several stages of preparation and processing. In this connection it should be explained that the Federal Meat Inspection Act does not confer jurisdiction over establishments the meats and products of which are shipped or handled wholly within the borders of a State. Such meats and products lie wholly within the jurisdiction of the local authorities. However, in those establishments at which Federal inspection is maintained all the animals slaughtered and all the meats and products handled there are inspected. In this way a very considerable proportion of the meats and products not shipped in interstate or foreign commerce is, nevertheless, Federally inspected.

The amount of meats and products condemned for disease or unsound condition has been large in the aggregate, but no larger than the protection of the public health requires. The Bureau constantly keeps in view its double duty of protecting the health and rights of the consumers of meats and at the same time to see that the greatest possible measure of conservation of meats and products consistent with such protection is accomplished. The probabilities are that if there were no Federal inspection a large proportion of the meat so condemned would have been marketed for human consumption, which is indicative of the direct relationship of the meat inspection service to the public health.

The standards of inspection are based on the best scientific knowledge of the present day and are sustained by the unanimous views of all the great scientists of the world who are experts on the subjects involved. Our regulations and practices are fully as stringent as those of any other nation and in some cases they are even more stringent.

After the close of the Spanish-American War, during which many lives were lost by disease, much adverse comment was heard with regard to the so-called "embalmed" meat furnished to our troops. Many statements appeared in the newspapers on this subject and it was a common topic of public discussion throughout the United States.

Under the present law there is sufficient authority furnished to prevent any recurrence of this character and it has been the persistent demand of the Government that the military and naval forces must be supplied, not only with a sufficient quantity of food, but with food which is nutritious, sound, healthful, and wholesome. Every effort is being put forth to supply this kind of product.

When the present war began the Secretary of War and the Secretary of the Navy requested the Secretary of Agriculture to assign meat inspectors to the various cantonments, training camps, forts, posts, and other places where large numbers of our boys were in training. This followed similar service by Bureau inspectors when American troops were mobilized on the Mexican border in 1916. Sixty-nine inspectors of the Bureau of Animal Industry are now with the army and thirty are with the navy. Thus the Federal inspection service which has protected the civil population of the United States from bad meat in interstate commerce has been extended to cover completely the meat and meat products supplied for the American army and navy.

The Bureau men are inspecting, selecting, and handling meats and fats for military consumption, and the operations are under supervision from the time the live animals are driven into the slaughtering shambles until the finished product is delivered in good condition to the mess cooks.

The army gets its meat from two sources—from the Quartermaster Corps and from private concerns. All meats supplied by the Quartermaster Corps are prepared in establishments operated under Federal inspection, and the majority of these products are further inspected in these plants by army meat inspectors assigned there for the purpose. Examinations made by inspectors at points of consumption are to detect unsoundness which may have developed after the products left the packing house and to determine whether they comply with specifications and contracts.

Inspectors also advise quartermasters with regard to proper storage and handling of meats, keep these officers informed of the supply on hand, make sure that the oldest packs are issued first, and assist in other ways to prevent loss from deterioration.

Troops must purchase in the open market fresh meat and meat products, other than fresh and frozen beef and mutton, because the Quartermaster Corps does not carry them. Thorough and efficient inspection of these products purchased locally for food in the kitchens is of more importance than the inspection of the meats furnished by the Quartermaster Corps. The former have not been inspected for specifications prior to their preparation for troops because the army does not require that such inspection of this class of meats be made.

All meat products must be handled in a sanitary manner. Wagons or trucks used to transport meats from points of issue to kitchens must be clean and equipped with tight-fitting tops, and persons who handle meat must wear garments that may be easily made clean again.

For the past ten or twelve years the Bureau of Animal Industry has coöperated with the Navy Department in the reinspection of meat and meat food products. The organization of the navy is different from that of the army. Not as many men have to be supplied and the manner of feeding them is not the same. The navy provides large mess halls and, unlike the army, does not have numerous small mess halls. The organization of the navy does not make local purchases because the supply division of the Navy Department furnishes all goods. Only "United States Inspected and Passed" meat and meat food products are pur-

chased, and these must be inspected for specifications in the packing plants by inspectors of the Bureau of Animal Industry, except at the Chicago plants, where the navy has its own inspectors.

The Navy Department desires the Bureau's inspectors to conduct all reinspections at receiving points. Inspection for the navy is not confined to meat and meat products, but includes other provisions, such as poultry, fish, oysters, clams, butter, eggs, cheese, fresh fruits, and fresh vegetables.

Because of the possible addition of harmful substances to meat products prepared for military use, inspectors stationed at official establishments are required to collect and forward to the meat inspection laboratories for chemical examination representative samples from every batch of food products prepared for the army or navy.

The analyses of these samples are given precedence over all other work, and include an examination for adulterants and chemicals, especially poisons.

The Bureau has completed its investigation of the statement made and widely published some weeks ago that meats and poultry unfit for food had been sold or offered for sale for army consumption at Camp Travis, Texas, and finds that the Federal meat inspection was not involved. This announcement is made because inquiries received indicate an impression that the reports reflected on its meat inspection service.

The published statements were based partly on information given out by the Federal Trade Commission, but a letter from Commissioner Victor Murdock to the Chief of the Bureau makes it clear that no blame attached to the meat inspection. Mr. Murdock says: "The question of meat contracted for by the army and examined by your inspector at San Antonio is not at issue. No complaint was heard of the meats issued by the camp quartermaster at Camp Travis. * * * The meats referred to in the complaints * * * were offered to the camp through channels which do not have the benefit of Federal inspection."

The public may rest assured that the Secretary of Agriculture and other officers of the Government are doing everything in their power to maintain the meat inspection service at a high standard and to improve its efficiency whenever and wherever it is possible. The chief object always held in view is the protection of the consumer against unsound and unwholesome products.

INFLUENZA OR SHIPPING FEVER OF HORSES.

The losses resulting from influenza or shipping fever of horses have been enormous, especially among animals shipped for war purposes. Since war was declared the Bureau extended its cooperation, as a war measure, to the officials of the War Department and State and local authorities at assembling and shipping points, with the view of minimizing the losses following exposure to this disease. Recently twenty-seven additional employees were detailed to this work, making in all seventy Bureau employees working in coöperation with the other interested officials to suppress the disease. These men are working practically in every State in the Union. Their work consists in inspecting horses for influenza, securing the segregation of animals found affected and the supervision of the cleaning and disinfection of barns, stables, corrals, cars, etc., used in connection with the handling of these horses. Though this work is yet in its infancy, sufficient progress has been made to show that the losses resulting from this disease can be greatly reduced.

TICK ERADICATION.

On July 1, 1906, 728,565 square miles of territory, involving fifteen states, were quarantined for Texas fever. It is estimated that the annual losses from this disease amounted to at least \$40,000,000. The movement of cattle from the quarantined territory for slaughter and other purposes was restricted by regulation, the animal population was of very inferior quality, good breeding stock could not be safely imported to improve the breeds, the dairy industry was insignificant, general agriculture was retarded through the presence of the tick, and the belief generally prevailed throughout the South that the ticks could not be exterminated. However, the work of extermination was taken up in a small way in 1906. It progressed very slowly for several years owing to the limited funds and opposition to the movement. After it was proved that extermination of the tick was possible and the benefits became obvious, the work progressed rapidly, and up to the present time 52 per cent of the original 728,565 square miles of territory have been released from quarantine. In other words, through systematic efforts of the Bureau in cooperation with the State authorities and live stock owners, the cattle tick has been exterminated in an area equal to the combined areas of the New England States, the Middle States, Virginia, West Virginia, Kentucky, Ohio, Indiana, and a third of Michigan.

As soon as the emergency appropriation became available after the declaration of war, additional veterinary inspectors were assigned to duty in the tick-infested territory and the work of eradication was pushed as a war measure. There were 286 Bureau inspectors, 284 State inspectors, and 1,202 county inspectors in the field during the latter months of 1917, and 21,247 dipping vats were in operation. The method of eradication consists in a systematic dipping in a standardized arsenical solution of all cattle in a community at regular intervals throughout the season. The cost of eradication has been found to be from 18 to 50 cents per head of cattle, while the increased value of each animal is greatly in excess of this, one canvass having resulted in an estimated average increase of \$9.76 per head.

With the release of the entire State of Mississippi from quarantine, in December last, a wedge has been forced through to the Gulf of Mexico and during the coming season the forces of inspectors will be increased as much as possible under existing conditions, and it may be safely predicted that the cattle tick will be completely exterminated in the South within the next five years.

HOG CHOLERA.

Hog cholera undoubtedly is the greatest impediment to increasing our hog production. In 1913, the Bureau instituted experiments in three counties located in different states to demonstrate the possibility of reducing losses from that disease through farm sanitation, quarantine, and the application of anti-hog cholera serum, properly administered by veterinarians. From these experimental efforts were developed the present control methods which are meeting with marked success. The emergency appropriation has enabled the Bureau to extend its coöperation to 33 states and we now have a force of 170 trained veterinarians in the field working in coöperation with agricultural colleges, state regulatory authorities, and local veterinarians to further reduce the losses from hog cholera.

Data compiled by the Department of Agriculture show losses of \$75,000,000 in 1914 from hog cholera and about \$32,000,000 for the year ending March 31, 1918. These figures show a reduction of over fifty per cent in the losses in less than five years, and judging from the field reports of Bureau inspectors, there has been a further reduction in the losses since the last estimate. Stated in another way, the country-wide death rate from hog cholera last year was 42 per 1,000, the lowest in 35 years, and a

wonderful contrast to the 144 per 1,000 in 1897 and 118 per 1,000 in 1914.

The extension of hog cholera work as a war measure, together with the increased activities of the Dairy Division and the Animal Husbandry Division, and the rigid enforcement of the regulations promulgated under the Serum-Virus Act of 1913, are bringing results that no doubt will reflect favorably in producing the required fifteen per cent increase in hog production in 1918.

SHEEP AND CATTLE SCABIES.

Sheep and cattle scabies became so generally prevalent and destructive a few years ago that the Bureau was called upon for assistance. Continued progress has been made since the inception of the work of eradication, and at the present time only eleven counties in the State of Texas, ten counties in California, and three parishes in Louisiana remain in quarantine for sheep scabies, while there is now no territory under quarantine for cattle scabies. This does not mean that cattle scabies has been entirely eradicated from every ranch in the United States, but it does mean that the infection has been reduced to such an extent that it can be handled effectively by the coöperation of Federal, State, and local officials.

In 1905, when the Federal fight against cattle scabies was begun, 1,285,000 square miles in Colorado, Kansas, New Mexico, Nebraska, North Dakota, Montana, Oklahoma, South Dakota, Texas, and Wyoming were under quarantine. The disease weakens cattle and reduces their flesh and causes some of them to die.

On April 15, last, Federal quarantines against sheep scabies were removed from 136 counties in Texas, with an area of 118,033 square miles. The area remaining under quarantine for this disease includes 56,769 square miles in California, Louisiana, and Texas. Since the war was declared, the field work in scabies eradication has been prosecuted with more vigor and general coöperation than ever before, and it is believed that by 1920 there will be no territory under quarantine for scabies.

TUBERCULOSIS.

Tuberculosis is the most widely distributed destructive disease that now menaces the live stock industry. It is estimated that the annual losses from animal tuberculosis amount to at least \$25,000,000. Its eradication is especially important, as it not only diminishes the national wealth by \$25,000,000 annually, but

it also affects human health to a degree that cannot be measured in terms of money.

Spasmodic efforts have been made in some sections of the country to eliminate this plague, but these efforts usually have been thwarted through obstructive opposition. Much educational work has been done to prepare the way for eradication. The literature on the subject abounds in convincing statistics, condemnatory of the general apathy manifested throughout the States in regard to the existence and continued spread of this disease.

The additional funds provided by the War Emergency Appropriation enables the Bureau to give more attention than ever before to the control of animal tuberculosis. The control measures will be applied in coöperation with State authorities and live stock owners along three lines: the eradication of tuberculosis from pure-bred herds, the eradication of tuberculosis from circumscribed areas, and the eradication of tuberculosis from swine. In the beginning, our efforts are being concentrated on the eradication of the disease from pure-bred herds. A conservative estimate of the prevalence of the disease in these herds places it at fifteen per cent, and as they are the foundation of our breeding stock, an important step in eradication would be accomplished if they were freed of the disease. A plan has been put into operation for the testing of pure-bred cattle with the view of eliminating the diseased animals from the herd, and it is believed that with proper coöperation in carrying it into effect, in connection with the judicious application of some restrictive measures, it will have a perceptible effect in diminishing losses from this disease. It is not a measure that is being forced upon the live stock industry, as the test will be administered only at the request of the live stock owners when they agree to place their herds under the supervision of the Bureau and are willing to carry out instructions in regard to the disposition of reactors and the cleaning and disinfection of their premises. The object of this undertaking is to create a list of pure-bred herds from which persons may buy breeding stock with reasonable assurance that they are purchasing animals for breeding purposes that are free from tuberculosis. Judging from the interest that is manifested in the project, and from the numerous applications for the test that are being received, there appears to be no doubt that in time there will be a sufficient number of herds placed in the accredited list to supply the demands for breeding stock.

The report covering the coöperative tuberculosis eradication work in the various States during the month of June shows that the operations have been extended to 32 States. Headquarters have been established in 17 important centers, from which the work is supervised and directed. During the month of June, 74 Federal employees and 58 State employees were engaged in the field work. There were over 16,000 cattle tested, which was an increase of 700 over the number tested during the previous month.

Time will not permit my entering into a discussion of our increased work to control blackleg, anthrax, hemorrhagic septicemia, contagious abortion, plant poisonings, and other diseases which serve to reduce our live stock production. Nor can I more than mention our monthly production of 300,000 to 400,000 doses of mallein for the use of the army; the question of salvage of sugar, saltpeter, and salt used in the curing of meats; the procurement of a substitute for edible lard oil to be used in the industries; the analysis of various articles found in stock yards and other places to determine whether they are infectious or carry poisonous substances; the use of casein of milk in the production of a waterproof glue in aeroplane manufacture; the coöperation with the War Department in producing horses for the army sired by Bureau stallions; the campaign to increase the leather supply by urging greater care in the skinning and curing of hides; the cottage cheese campaign to increase the consumption of this wholesome meat substitute; the stimulation of pork production, poultry production, egg conservation, beef production, sheep and wool production; the supervision of moving cattle from drought-stricken sections to points where grazing land and feed are plentiful; the supervision of importing cattle from Central America, Mexico, and adjacent islands; the substitution of feed in cattle feeding that cannot be used for human food; the establishment of another branch pathological laboratory at Denver to facilitate the prompt diagnosis of infectious diseases in the Rocky Mountain districts in order to control speedily any serious losses to the live stock industry in that section; the coöperation with the Public Health Service in the extra-cantonment zones for the purpose of insuring safe and sanitary dairy products for army cantonments and naval stations, etc. In addition, it should be recorded that the Bureau as a war auxiliary has furloughed to the War Department 355 from among its most aggressive and best equipped employees for military duty, not only in the Veterinary

and Sanitary Corps, but as artillery, cavalry, and infantry officers as well. If need be, we can duplicate, quadruplicate, or multiply this number to an even greater extent and my earnest prayer is that all of these men may return safely and speedily as conquering heroes. This loss of men has handicapped the Bureau considerably, but not nearly so much as the loss of almost 1,200 additional employees through resignation since war was declared to accept more lucrative employment in the industrial world. Notwithstanding these losses, the Bureau has been able to maintain a high standard of efficiency as a result of the faithful and patriotic services of the present personnel, as is shown by the activities and accomplishments of the current year.

In conclusion, it should be emphasized that at this time the conservation of health, both animal and human, is not only an economic necessity, but a patriotic duty as well, and each of us can do his share, especially by helping to eliminate the tremendous wastage due to the diseases above mentioned. Our war waged in the cause of humanity calls for the rapid development of our resources, conservation of our supplies, invincible determination and endurance, and liberal contributions of our means, our strength, and our ability in order to achieve victory and permanent peace. Therefore, let us reconsecrate ourselves to this great, fair land of ours and determine to stand together until "Old Glory" shall wave in triumph over the smoke-covered battlefields of France, and human liberty and justice shall be secure throughout the world.

TUBERCULOSIS AND OUR LIVE STOCK INDUSTRY.*

JOHN A. KIERNAN, Washington, D. C.

"Any efforts to reduce or control tuberculosis of live stock, in order to be of lasting value, must have eradication in view as the final object. We should not temporize with such an insidious malady, but we should adopt aggressive measures that will insure success within a reasonable time."

Words taken from the address delivered before Section VII, Sixth International Congress on Tuberculosis, in the City of Washington, September 29, 1908, by the beloved Melvin.

A more noble ambition could scarcely be conceived in the mind of man. In approaching the subject of tuberculosis erad-

* Presented at 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

ication we are forced to consider it from a national point of view. The live stock industry of each state is but a part of the agricultural resources of the nation. The greater the productivity of the cattle industry of one commonwealth, the larger will be the resources of the Union. The deeper disease preys upon our cattle, be it in the North, South, East, or West, the lower sinks our resources. The live stock belongs to the individual, and our political system encourages the development of enterprise among its citizens. The law does not limit us to the ownership of ten or ten thousand cattle. We may sell them, kill them, give them away, traffic and barter with them in any way we choose, just as long as they are sound in health, but should they at any time become diseased and be a source of danger to the stock of our neighbor, the law, which is made for all the people, restrains us, under the police authority of the State or Federal governments, from jeopardizing the health of other animals. A man's goods are his own as long as they are handled in accordance with the general welfare laws and regulations, but when private business becomes a menace to the community at large, it must be properly guided and directed by supervisory restrictions. Our live stock wealth is prodigious—the largest of any nation in the world, as the following brief statistics indicate:

We had January 1, 1918, cattle valued at \$3,159,221,000.00.

We had January 1, 1918, swine valued at \$1,361,242,000.00.

It is a fact well recognized in all campaigns of disease eradication that the primary principle to put in operation is to put a stop absolutely to the dissemination of infection by disease-bearing persons or animals. The Congress of the United States recognized that principle when, in 1884, it provided, in Section 6 of the Act approved May 29, that no person, firm or corporation shall move or permit to be moved interstate any animal affected with any contagious, infectious or communicable disease, except cattle infected with the tick may be moved for immediate slaughter.

The opinion prevails largely that by revoking even that one exception tick eradication would have been greatly stimulated in localities where only a lukewarm sentiment prevails. The Southern Cattlemen's Association, representing, at least, the majority view of the live stock owners of twelve States, has unanimously adopted, for five consecutive years, resolutions petitioning Congress to prohibit by law the interstate movement of tick-infested cattle at any time for any purpose.

Under the provisions of the above-mentioned Act neither a tuberculosis cow nor hog may be moved from the confines of one State into any other State or the District of Columbia, but, as a matter of fact, they do move every year by the thousand. It might seem that some official was derelict in his duty in not checking that traffic or prosecuting the perpetrators. The reason, however, that the latter course is so infrequently followed is due to the difficulties of obtaining positive evidence that the consignor knew at the time the movement was made that the animal or animals were actually diseased. We may have knowledge that a certain person deals, almost exclusively, in tuberculous cattle, but it is more difficult to convict such a person than is usually believed, a demonstration of which is shown by the length of time it took to obtain the evidence to convict a notorious dealer in tuberculous cattle who was sentenced by a United States judge to eight years' imprisonment in a Federal penitentiary and to a fine of \$3,000. The time to put up the bars against the traffic interstate in tuberculous cattle is imperatively at hand. In this respect the state departments and the Federal government should act conjointly.

AREAS AFFECTED WITH TUBERCULOSIS.

One-half of the square area of the United States is comparatively free from bovine tuberculosis, a condition which is as pleasing to know as it is fortunate. The coöperative work that has now been in progress with the various States for nearly one year and the tuberculin testing done under State supervision prior to that time is the basis upon which the foregoing statement is predicated. In at least one-half of the area of the United States tuberculosis among cattle exists to less than one per cent. The majority of the tuberculin testing done in the States where we believe the disease exists to such a limited degree was confined to the herds within close proximity to towns and cities into which cattle had been introduced from other States. For instance, during the month of June, 1918, in Alabama, out of the 926 cattle tested, 65 animals had been introduced into the State recently. Of the 65 cattle, 11 reacted to the tuberculin test. Of the 858 native Alabama cattle tested during the month, one reactor was found. Practically all of the dairy cattle in Madison and Montgomery counties of that State have been tested and a very slight degree of infection found. The same conditions prevail throughout the area in which it is believed that the native cattle are almost entirely free from tuberculosis.

SUMMARY OF TUBERCULOSIS ERADICATION WORK IN CO-
OPERATION WITH VARIOUS STATES, FISCAL YEAR 1918.

STATES	Cattle Tested	Number Reacting	Number Reactors Slaughtered	Percentage Reacted
Alabama.....	4,083	44	8	1.2
Arizona.....	....	..	..	..
Arkansas.....	130	..	..	..
California.....	....	..	..	..
Colorado.....	....	..	..	..
Connecticut.....	592	42	36	7.11
Delaware.....	71	..	..	..
District of Columbia.....	1,206	12	10	.99
Florida.....	456	37	36	8.00
Georgia.....	4,563	170	152	3.70
Idaho.....	1,454	90	63	6.19
Illinois.....	2,508	590	42	23.52
Indiana.....	2,325	107	91	4.65
Iowa.....	197	29	14	14.72
Kansas.....	....	..	..	..
Kentucky.....	838	8	..	.96
Louisiana.....	1,093	20	7	1.83
Maine.....	4,706	184	139	3.91
Maryland.....	3,171	170	143	5.36
Massachusetts.....	2,004	235	154	11.73
Michigan.....	3,769	203	164	5.39
Minnesota.....	12,138	493	512	4.06
Mississippi.....	1,944	21	11	1.80
Missouri.....	19	1	1	5.26
Montana.....	10,684	485	319	4.54
Nebraska.....	....	..	..	..
Nevada.....	....	..	..	..
New Hampshire.....	249	17	6	6.83
New Jersey.....	570	29	29	5.09
New Mexico.....	567	6	6	1.06
New York.....	196	30	27	15.31
North Carolina.....	2,108	63	22	2.99
North Dakota.....	14,869	502	260	3.38
Ohio.....	3,360	153	71	4.55
Oklahoma.....	....	..	..	..
Oregon.....	1,805	62	30	3.43
Pennsylvania.....	1,045	60	24	5.74
Rhode Island.....	163	13	8	8.00
South Carolina.....	3,594	89	52	2.48
South Dakota.....	1,246	86	14	6.90
Tennessee.....	2,684	111	70	4.14
Texas.....	936	20	16	2.14
Utah.....	4,019	65	60	1.62
Vermont.....	7,472	989	863	13.24
Virginia.....	18,627	548	491	5.90
Washington.....	1,424	84	33	2.94
West Virginia.....	257	7	6	2.72
Wisconsin.....	3,087	70	3	2.26
Wyoming.....	....	..	..	..
Totals.....	126,229	5,945	4,005	3.91

Viewing the situation, therefore, from the point of view that the native herds are not tuberculous, is it not a rational deduction that we have drawn? If you will grant that the custodians of the health of animals possess such an extraordinary strategic advantage in this campaign, is there any person who has any doubt as to the proper action that should be taken? If those states which

are so fortunately situated, and the Congress of the United States, would agree to take charge of and purchase every tuberculous animal found therein, it would be possible, in ten years, to have one-half of the country free from the greatest menace to the live stock industry extant. We are not certain that there are not more states which, by virtue of their freedom from disease, are entitled to be placed in the same class. Nothing would cause more satisfaction than to learn that a number of other states possessed less than one per cent of tuberculosis in their herds. Do not conclude that we are suggesting, at this time, the establishment of a quarantined area and a free area, or the issuing of unreasonable or impracticable regulations governing the interstate movement of cattle, but, if we are to make progress in tuberculosis eradication, every possible agent must be employed to stop the movement of diseased animals. In the vast empire of the West, which was a "no-man's land" but a few decades ago, there is a determination upon the part of the cattlemen and the veterinarians to keep out disease of every nature. They are perfectly capable of taking care of that work, but as a further precaution they should be protected by adequate regulations governing the interstate movement of cattle for purposes other than immediate slaughter. The Southern States, with the exception of Texas, is virgin territory for the development of the dairy and beef cattle industry. However, it is developing more rapidly than the most sanguine live stock man dared dream of ten years ago. The veterinarians of the South—and many of us—have a special interest in those states because we contributed to making it possible to build up the cattle industry by eradication of the tick. Those states have experienced untold hardships and have made many sacrifices in their struggle to gain a place in the sun, but, thank God, they are now in the bloom of prosperity and will keep on improving agriculturally as long as they follow the principles laid down by such leaders as Butler, Dalrymple, Cary and the other able agricultural workers who have devoted the best years of their lives to educational work. The veterinarians of the South—like those of other parts—have gained the implicit confidence of their people, who will go the limit in acting upon their advice. They have helped to lead them into the cattle business from the one-crop system in vogue for half a century. Will you not help them to develop that industry upon a sound foundation by helping to keep tuberculosis out of those states?

REGULATIONS ARE NO HINDRANCE TO LIVE STOCK DEVELOPMENT.

The effect of restrictions governing the interstate movement of live stock upon a state or a group of states has not meant destruction and bankruptcy for the industry affected, as you can attest. Did the rigid quarantine placed around the sheep-raising states for scabies ruin that industry? Let the sheepmen testify to that. Were the Western States ruined because of the cattle scabies quarantine? Ask the cattlemen who were affected by it. Was the South ruined by the quarantine imposed to restrict the movement of the cattle tick North? Out of that quarantine came the emancipation of the cattle industry. Were the several quarantines promulgated in connection with foot and mouth disease ruinous to America's live stock?

Without those quarantine measures we would be shackled to a chain of devastating plagues that would have enslaved us forever. Gentlemen, shall we go on, year after year, victims of our own indecision? Or shall we have the temerity to face the tuberculosis menace as we grappled with the previous foes and brought them under subjection? Is tuberculosis the master of us? Or shall it be conquered? We must now, in 1918, take issue with this foe and let the conflict decide who shall be master and who subservient. In all previous conflicts in the United States disease has met its Waterloo for two principal reasons, *i. e.*, first, we have had the support of the people, which is, at least, 75 per cent of the battle, and, secondly, we have attacked with efficient organizations. It is organization work that counts. In all police control work it is the organization that commands. Individual effort, no matter how skillful it may be, is absolutely limited in its power to accomplish results both by lack of authority and restriction of the field of activity.

The establishment of uniform state regulations respecting the interstate movement of cattle would, beyond a peradventure, be the greatest stride that could possibly be made in tuberculosis eradication work. It would not impose the death-blow upon any state or any herd of cattle. It would not be a stigma upon any state or cattle owner. It would not be a reflection upon any state veterinary association or upon any individual veterinarian. It would not prohibit the interstate movement of cattle, except tuberculous cattle—and who challenges the right by law of the legislature, or by moral law, to prohibit the interstate movement of diseased cattle?

There are some individuals who, apparently, have been inspired with the ambition to gather together all the reactors that are permitted to be moved promiscuously within the commonwealth without any permanent mark of identification upon them. Some of these cattle are tested, and tested, and tested again, until they are practically immune to thermal response and, frequently, they are sold as healthy cattle for interstate shipment. There are not a great many nefarious dealers of that calibre, and putting them in some other business would relieve the cattle industry of no indispensable members.

Under the proposed uniform regulations, healthy cattle would be permitted to be moved interstate at any time and for any purpose; the movements would be made without delay, and, on the whole, business would not be interfered with.

THE FEASIBILITY OF ERADICATING TUBERCULOSIS.

The eradication of tuberculosis—you will grant—is a large task. Its feasibility will have to be established first as was the case with tick eradication and the other movements of similar proportions.

As the campaign progresses there is no doubt that improvements will be made until an efficient system is developed. In arriving at some conclusion that is a basis for believing that tuberculosis may be eradicated, we must recognize the work accomplished in many of our states and in foreign countries. No doubt every state official and practicing veterinarian here can point to herds which, a few years ago, were diseased, but which have, since, been freed of tuberculosis and are now free. When you succeed in cleaning up one or several herds you are inspired with a confidence that the same application of methods extended over a greater area will succeed in the same ratio. Haven't some of you in mind herds which, if you had been given a free hand, or if you had the work to do over again, you could clean up? Were there not animals in some herds which you gave the benefit of the doubt to, in diagnosing the test, and which by reason of your wider experience you would now class as reactors? No claim is made that we are better able to interpret the results of the tuberculin test now than at any other period, except that, with each individual, the more experience he has, the better equipped he is to determine the reliability of that product, providing he has been a student of the test. If he has used tuberculin for twenty years and has measured its capabilities by rule of thumb method he is no more capable of making a diagnosis today

than when he commenced. Some of you, no doubt, are acquainted with the results obtained in eradicating tuberculosis from circumscribed areas, but, as such data is not at hand, we will consider the results of the campaign which has been in progress in the District of Columbia since 1910. Through a coöperative arrangement with the Commissioners of the District, the Bureau detailed inspectors to test all the cattle within that municipality, which amounted to 1,701 head; 18.87 per cent reacted and were all slaughtered. The results of the following years' tests are as hereinafter indicated:

1911.....	3.71
1912.....	2.30
1913.....	1.83
1914.....	2.03
1915.....	1.75
1916.....	1.10
1917.....	.84
1918 (not as yet completed).....	

The order of the Commissioners, dated November 26, 1909, regulates the movement of cattle into the District by requiring that no animals shall be brought, except by permit, and that they shall be tuberculin-tested by an official of the Bureau. Without that provision the task of eradicating the disease would be extraordinarily increased. It is one of the most practical provisions of the whole campaign and has been demonstrated by its practical operation for more than ten years. For about the same period of time hundreds of herds in the States of Maryland and Virginia have been under supervision, with approximately the same results. In fact, wherever and whenever a rational method has been employed the results have been satisfactory. As might be expected, however, there are exceptional herds in which the disease persists to a slight degree, for some reason. These exceptions, while perplexing, should not discourage either the inauguration or the continuation of tuberculosis eradication work in any state. Within every state, sooner or later, a campaign of tuberculosis eradication should be carried on and just as quickly as a county becomes clean of the infection, or the infection becomes reduced to a small number of herds, it should be placed in the free area. From the restricted area cattle could be moved into the free area for immediate slaughter with no more regulatory provisions than exist right now. From most of the states,

therefore, 98 per cent of the cattle shipped would go forward, as now, without interference. The balance of the cattle moved for dairy or breeding purposes should be limited only to herds the health of which is known and which are either free from tuberculosis or under supervision for the eradication of that disease.

The question arises, Are there a sufficient number of healthy herds to furnish the annual supply of animals to the other states for the aforementioned purpose? There will be within the time in which it will be possible to put the proposed plan in operation. During the interim, however, the states particularly affected might develop their organization so as to handle the situation. With adequate attention there should not be any extraordinary inconveniences encountered. Of course, it would be ludicrous to expect that some individuals would not be put to considerable annoyance by reason of the fact that tuberculosis had not been dealt with in his herd with the idea of exterminating it. Every assistance should be given to those owners to establish their herds upon a sound and safe basis at the earliest date possible.

TUBERCULOSIS ERADICATION METHODS.

How shall we proceed to eradicate tuberculosis from a state? Unfortunately, it is impossible to outline a positive plan which, if faithfully practiced for ten to twelve months, will transform a diseased into a healthy herd, as may be done in the eradication of other diseases. In Texas fever nine months' dipping of cattle in arsenical solution every two weeks will, positively, eradicate the tick from any given area where the plan is followed. No one plan has yet been evolved for the eradication of tuberculosis that can be applied in every state. What may prove highly successful in one section would be inapplicable entirely elsewhere. For instance, to advocate the destruction of all reactors in a state where 20 per cent of the cattle are affected would be inadvisable. To attempt to slaughter them where the percentage is in advance of that would be a criminal waste, but to fail to destroy tuberculous cattle in states with less than 2 per cent of infection would be equally unfair, unsafe, and unwise. To determine the number of diseased animals in a given area it is, of course, necessary that all shall be tuberculin-tested. The length of time it will take depends upon the number. In a county with 10,000 head of cattle ten inspectors and assistants could make the rounds in from one to two months, depending upon the method employed,

the aid given by the people and the percentage of disease found. If but one per cent was found, they could be slaughtered under inspection, the owners indemnified by the county or state and the Federal government; the barns or sheds where the diseased animals had been kept should be thoroughly cleaned and disinfected under supervision. That plan would, necessarily, have to be repeated annually for a few years and then, at longer intervals, as long as infection remains. Where a larger number of reactors are found they would have to be cared for by the method previously decided upon and officially adopted by the state in which the campaign was being conducted. Most certainly a carefully considered policy should be provided for before the campaign is inaugurated. The establishment of tuberculous herds under state supervision may prove a wise solution of the problem in badly infected sections. Herds containing 75 per cent or more of reactors should be classified as wholly tuberculous; herds containing less than 75 per cent of reactors should be divided, the healthy animals being retained and the others moved to separate farms, preferably to farms maintained exclusively for diseased herds under supervision. The remnant of the herds which was found apparently free should be retested at proper intervals, which will probably disclose additional reactors.

COOPERATION NECESSARY FOR SUCCESS.

It is considered necessary to emphasize, at this point, that these proposed operations will be possible only when the owners, herdsmen, manager and everybody connected with the herd is bent upon accomplishing tuberculosis eradication. In all the campaigns of disease extermination a considerable number of people were found who knew, positively, that that particular work could not be accomplished because, as they stated, the plan was impracticable and could not possibly be put in operation. The opposition encountered on other occasions will dwindle into insignificance compared with the avalanche of criticism, skepticism and bellicosity that will arise directly after this work is inaugurated in some sections. The fact, however, that we will be subjected to harsh criticism should not deter any official from inaugurating the campaign of tuberculosis eradication after he has satisfied himself and his advisers in the state that it is the proper thing to do. Talk it over with your people. Let them consider it deliberately. Do not try to force the issue. But advocate it on all occasions as a sound, economical policy. If

you, on the other hand, hold the view that the tuberculous cow is dangerous only when you, perchance, discover that it is a spreader, consider seriously the predicament your constituents will be placed in should other states refuse to accept their cattle.

TUBERCULOUS COW IS TOO DANGEROUS FOR A HEALTHY HERD.

We are of the opinion that, as sanitarians, we should consider the tuberculous animal dangerous at all times; not that it should, necessarily, be destroyed, but its introduction into healthy herds should be discouraged under any circumstances.

The Chief of the Bureau, Dr. John R. Möhler, in Bulletin No. 44, published in 1903, concluded from exhaustive experiments regarding the infectiousness of milk of cows which have reacted to the tuberculin test that:

- “1. The tubercle bacillus may be demonstrated in milk from tuberculous cows when the udders show no perceptible evidence of disease, either macroscopically or microscopically.

2. The bacillus of tuberculosis may be excreted from such an udder in sufficient numbers to produce infection in experimental animals both by ingestion and inoculation.

3. That in cows suffering from tuberculosis the udder may, therefore, become affected at any moment.

4. The presence of the tubercle bacillus in the milk of tuberculous cows is not constant, but varies from day to day.

5. Cows secreting virulent milk may be affected with tuberculosis to a degree that can be detected only by the tuberculin test.

6. The physical examination or general appearance of the animal can not foretell the infectiveness of the milk.

7. The milk of all cows which have reacted to the tuberculin test should be considered as suspicious, and should be subjected to sterilization before using.”

More than ten years ago Dr. Schroeder said, in his bulletin entitled “Some Facts About Tuberculous Cattle,” that:

“The tubercle bacillus grows and multiplies nowhere in nature but in the bodies of tuberculous persons, cattle, and other animals, but it can live separated from these bodies for periods of time that vary in length according to the conditions by which it is surrounded. In sunlight it dies very rapidly, and in dark and damp places, protected from light and drying, it may live many months.” Continuing, he said: “A tubercle bacillus can no more come into existence without a parent tubercle bacillus than,

for example, a cornstalk can come into existence unless it does so as the offspring of a parent cornstalk. The body of an animal can not create or spontaneously generate a bacillus any more than a seedless patch of earth can spontaneously originate a cornstalk. Hence, as the tubercle bacillus is the indispensable cause of tuberculosis, and grows and multiplies nowhere in nature but in the bodies of tuberculous subjects, it follows naturally that every case of tuberculosis is the direct result of infectious material, expelled from the body of a previously tuberculous subject that has found its way into the body of a subsequently tuberculous subject." The same eminent authority pointed out, several years ago, that 40 per cent of tuberculous cows expell tubercle bacilli from their bodies in a way that is dangerous to the health of other animals and persons through open lesions in the respiratory tract, or organs of reproduction, and, mainly, through ejecta from their bowels. He said: "The tuberculous cows that expel tubercle bacilli from their bowels frequently begin to do so long before they show signs of their diseased condition."

Dr. Udall, in his excellent report published in the Report of the New York State Veterinary College, 1915-16, entitled "Further Report on the Diagnosis of Open Cases of Tuberculosis," quotes the solemn warning of Prof. Bang to cattle owners. The eminent Dane said: "Owners of cattle ought to prevent the contamination of calves and other animals still healthy." That is a quotation which should serve as a commandment—like the time-honored mottoes—which should be hung up in the old-fashioned way in every barn in America to remind the owners of the homely adage that "*An ounce of prevention is worth more than a pound of cure.*" Could these simple principles only have been indelibly impressed upon the minds of cattle owners and have been put in practical operation, we would have advanced a long way in tuberculosis eradication. *It is the tuberculous animal that is dangerous*; and it is only by separating the tuberculosis-diseased animals from the healthy ones and bringing up the young under healthy environments that sound herds can be maintained. Can it be explained why an animal expelling organisms per rectum is less a source of danger than one found to be a spreader through the mouth or nasal passages? The thought is foreign to the mind of the speaker to take issue with any authority respecting any plan he has found efficacious in freeing a herd from tuberculosis. We are too conscious of the

tremendous superiority of our contemporaries to become engaged in any debate on the merits of their plans.

THE BANG METHOD IN AMERICA.

However, we are compelled to take an inventory of how well we have succeeded in the United States by the practice of the Bang method; how many states have adopted that plan and how many herds in each state have been cleaned up thereby. It is not too late now to put it in operation if there is a reasonable prospect of carrying it to a successful conclusion. That it has succeeded—and other methods have succeeded under the supervision of their authors—is an undisputed question; but why we have not availed ourselves of them may be due to our national characteristic—to do things with great expedition. Have we tried the Bang method as that illustrious veterinarian would execute it? If so, that owner has succeeded. When the owner or herdsman or other employee has taken milk from the Bang herd and deposited it in the same cans into which the milk from the healthy herd is placed, and fed the contents to healthy calves, the Bang method has failed, and will continue, inevitably, to fail under such practices. Neither will the Bang method succeed when pasteurized milk from the infected herd is fed under the following conditions, which have come to the notice of the Bureau. It is our common experience in testing herds periodically to find new reactors at each succeeding test. The case reported is of a herd conducted under the Bang method. Reactors were found in the supposedly healthy herd at each test, which continued to be an enigma until it was discovered that the pasteurizing receptacle, which had a capacity of 100 gallons, was constructed in the following manner: the receptacle was of about 100 gallons' capacity, and the contents were heated and agitated by a spiral revolving coil of copper pipe, in which circulated steam. The milk within the pasteurizer was brought to a proper temperature, and held for thirty minutes, this leading the operator to believe that the milk was properly treated, which was actually the case as far as the process was concerned. At the end of the receptacle, however, was a drain pipe of $\frac{3}{4}$ -inch diameter and three feet long with a faucet at the distal end. When milk was poured into the pasteurizer preparatory to heating, this pipe filled down to the faucet and its contents were not even warmed; consequently, the first bucket of milk drawn off contained this volume of unheated milk, and the calf fed this

bucketful got some unheated milk from the tuberculous cows. The moral of this case is to show the necessity of combining general observation in endeavoring to eradicate tuberculosis from any herd of cattle.

TUBERCULOSIS NOT ERADICATED EASILY.

In eradication work one tuberculin test with the removal of the reactors is not going to clean up many herds. The testing must be repeated at semi-annual intervals for two or three tests, after which, in most cases, annual tests will be sufficient. How long they should be continued is indeterminable; but we have reason for believing that the results will be so satisfactory up to this stage of the campaign that public opinion will support the continuation of a well-conducted campaign thereafter. If the time must be estimated in which a county or group of counties may be practically freed from tuberculosis, the problem will have to be calculated upon, first, the coöperation of the people, and, secondly, the efficiency of the organization doing the work.

ACCREDITED HERD PLAN.

You are all acquainted with the Uniform Method for Accredited Pure-Bred Herds of Cattle Found Free from Tuberculosis, which was unanimously adopted by the United States Live Stock Sanitary Association, approved of by a committee representing the pure-bred associations, and adopted by the United States Department of Agriculture. The provisions of the plan are as follows:

UNIFORM METHODS AND RULES FOR TUBERCULOSIS-FREE ACCREDITED HERDS OF PURE-BRED CATTLE.

1. A tuberculosis-free accredited pure-bred herd is one which has been tuberculin tested by the subcutaneous method, or any other test approved by the Bureau of Animal Industry, under the supervision of the Bureau of Animal Industry, or a regularly employed veterinary inspector of the state in which co-operative tuberculosis eradication work is being conducted jointly by the United States Department of Agriculture and the state. Further, it shall be a herd in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, as above described, and by physical examination.

2. The entire herd, or any cattle in the herd, shall be tuberculin tested or retested at such times as considered necessary by the Federal and state authorities.

3. No cattle shall be presented for the tuberculin test which have been injected with tuberculin within sixty days immediately preceding or which have at any time reacted to a tuberculin test.

4. No herd shall be classed as an accredited herd in which tuberculosis has been found by the application of the test, as referred to in paragraph 1, until such herd has been successfully subjected to two consecutive tests with tuberculin, applied at intervals of not less than six months, the first interval dating from the time of removal of the tuberculous animal from the herd.

5. Prior to each tuberculin test satisfactory evidence of the identity of the registered animals shall be presented to the inspector. Any grade cattle maintained in the herd, or associated with animals of the herd, shall be identified by a tag or other marking satisfactory to the state and Federal officials.

6. All removals of registered cattle from the herd, either by sale, death, or slaughter, shall be reported promptly to the said state or Federal officials, giving the identification of the animal, and, if sold, the name and address of the person to whom transferred. If the transfer is made from the accredited herd to another accredited herd, the shipment shall be made only in properly cleaned and disinfected cars. No cattle shall be allowed to associate with the herd which have not passed a tuberculin test approved by the state and Federal officials.

7. All milk and other dairy products fed to calves shall be that produced by an accredited herd, or, if from outside or unknown sources, it shall be pasteurized by heating to not less than 150 degrees Fahrenheit, for not less than twenty minutes.

8. All reasonable sanitary measures and other recommendations by the state and Federal authorities for the control of tuberculosis shall be complied with.

9. Cattle from an accredited herd may be shipped interstate, by certificate obtained from the office of the state live stock sanitary officials of the state in which the herd is located, or from the office of the Bureau of Animal Industry, without further tuberculin test for a period of one year, subject to the rules and regulations of the state of destination.

10. Strict compliance with these methods and rules shall entitle the owners of tuberculosis-free herds to a certificate, "Tuberculosis-Free Accredited Herd," to be issued by the Bureau of Animal Industry and the state live stock sanitary authority. Said certificate shall be good for one year from date of test unless revoked at an earlier date.

11. Failure on the part of owners to comply with the letter or spirit of these methods and rules shall be considered sufficient cause for immediate cancellation of coöperation with them by the state and Federal officials.

There is no doubt but what it could be improved upon, but we should wait until it has been in operation for one or two years, when we will be better informed of the changes which should be made. Any suggestions for amending it should be sent to the Chairman, Committee on Tuberculosis Eradication, Dr. W. F. Crewe, Bismarck, North Dakota. The Accredited Herd Plan has received a cordial reception from the breeders of cattle in every section of the country, and in practically every state. It has been adopted also by the live stock sanitary officials of virtually every state in the Union. It has met with approval largely because its practicability appeals to the practical business breeder and the live stock sanitary officials. It is purely a voluntary measure enforced by no law or regulations, but by the mutual agreement between the live stock owners and live stock sanitary officials. Every state has agreed to accept the cattle from accredited herds in accordance with the provisions set forth in the uniform plan. That is a great stride in the adoption of uniform live stock regulations. The accredited list, a publication which contains the names of the owners of fully accredited herds and

also of those herds which have passed one successful tuberculin test without reactors, was recently issued by the department and distributed to 50,000 persons, firms, and corporations associated with the cattle industry. We believe that this pamphlet will prove to be a great stimulus in furthering interest in accredited herd work. It should set the owners who are not included in the list thinking, and no doubt will be the means of furnishing additional applications for official tests from every state. There are many herds which, unfortunately, could not be included in the list because at the time of the testing one or two reactors were found. It would seem advisable that, in addition to advertising the names of the owners of the free herds, the names of the owners of herds having less than two or three per cent of reactors should be included, providing the owners approve of such action. There are herds in which less than three per cent of reactors have been found from which most of us would consider it reasonably safe to purchase animals and, certainly it would be far safer to buy out of such herds than from those the condition of which is not known. The owners of accredited herds could certainly obtain such publicity through the lists which are being distributed as could not be purchased in any other way; and it does seem only a fair proposition to acquaint the public with the fact that there are herds which are free from tuberculosis. It was possible to accredit a considerable number of herds soon after the adoption of the plan because Minnesota, Wisconsin and other states had been conducting the work, under state supervision, for some time, and the Bureau had been engaged likewise for nearly ten years. Satisfactory arrangements for coöperative tuberculosis eradication work have been made in about forty states, and state and Federal inspectors are prepared to tuberculin-test pure-bred herds that the owners are desirous of establishing as accredited.

UNIFORM COOPERATIVE AGREEMENT GOVERNING TUBERCULIN TEST.

A uniform plan of agreement, between the state, the Bureau and the owner, is now in operation quite universally. The agricultural appropriation bill for the fiscal year terminating June 30, 1919, contains an appropriation of \$500,000 for tuberculosis eradication work. It further provides partial indemnity to owners of cattle which are destroyed and also permits the interstate shipment of tuberculous cattle under regulations promulgated by the Secretary of Agriculture. The tuberculosis item in the bill is as follows: In pursuance of the above-mentioned Act of

Congress regulations were promulgated by the Secretary of Agriculture, and I take the liberty of quoting some of the more important sections of them:

Regulation 5. To Prevent the Spread of Tuberculosis in Cattle and Swine.

Section 1, Paragraph 1. Pure-bred registered cattle or grade cattle affected with tuberculosis as disclosed by a physical examination or by the tuberculin-test, or by any other means, may be shipped to a public stock yards where Federal inspection is maintained and sold for immediate slaughter under Federal inspection, provided the following conditions are strictly observed and complied with:

Paragraph 1. (a). The cattle shall be marked for identification by a brand, T. R. on left jaw not less than two inches nor more than three inches high, or a letter T not less than one and one-half inches long nor less than one inch wide, shall be punched out of the left ear, or a letter T not less than one inch long and one-half inch wide shall be tattooed on the inside of the left ear.

Section 1, Paragraph 2. Pure-bred registered cattle affected with tuberculosis as disclosed by a physical examination or by the tuberculin-test, or by any other means, which had been shipped interstate accompanied by a health certificate and tuberculin-test chart issued by an inspector of the Bureau of Animal Industry, a state veterinarian, an assistant state veterinarian, or a veterinarian approved of by the live stock sanitary authorities of the state from which the shipment or movement was made, indicating that the animal or animals is or are free from tuberculosis and any other contagious, infectious, or communicable disease, may be reshipped interstate within six months from date of entry into any state for immediate slaughter, provided the following conditions are strictly observed and complied with:

Paragraph 2. (a) The original and retest tuberculin-test charts shall be submitted to an inspector of the Bureau for examination and shall show satisfactory evidence that both tests were properly conducted.

(d) The shipment or movement otherwise shall be accompanied by a certificate issued by an inspector of the Bureau.

(e) The cattle shall be consigned to original shipper and to the same point of origin as indicated upon the tuberculin-test chart.

(f) The cattle shall be placed under quarantine as soon as received at destination and shall not again be offered for interstate shipment except for immediate slaughter.

Section 4. No cattle shall be shipped interstate from herds known to contain or to have recently contained tuberculous cattle, unless and until such cattle have been subjected to the tuberculin-test and are accompanied by a certificate showing that the cattle are free from tuberculosis, issued by a Bureau inspector or a regularly employed state inspector engaged in cooperative tuberculosis eradication work.

The following excerpts are taken from the regulations governing the appraisalment of tuberculous cattle and the compensation to owners of such cattle when so destroyed and slaughtered under the Meat Inspection Law:

Regulation 3. Coöperative Agreements.

Section 1. If it appears to be necessary for the arrest or eradication of tuberculosis to destroy tuberculous animals and to compensate owners for loss thereof, the Chief of the Bureau may, in his discretion, expend in the City of Washington, or elsewhere, not to exceed one-third of the difference between the appraised value of such animals and the value of salvage thereof, not to exceed \$25.00 for any grade animal or \$50.00 for any pure-bred animal.

Section 2. No payment hereunder shall exceed the amount paid or to be paid by the state, county, or municipality where the animal shall be destroyed.

No compensation can be paid to owners of tuberculous cattle except in states, counties, and municipalities in which coöperative tuberculosis eradication work is being conducted.

Regulation 4. Appraisal of Animals.

Section 1. Animals affected with tuberculosis will be appraised by a representative of the Bureau and a representative of the state, county, or municipality, jointly, except that if the owner and state, county or municipal authorities approve, animals may be appraised by representatives of the Bureau alone.

Section 2. Bureau inspectors in charge of the work of eradication of tuberculosis in any state, or in any part of the state, may act as appraisers of animals and may detail competent Bureau employees under their direction to act as appraisers.

Section 3. Dairy cattle shall be appraised at their dairy or breeding value; all other cattle shall be appraised at their meat or breeding value.

Section 4. Appraisals of animals shall be reported on forms furnished by the Bureau (T. E. Form 23). Reports of appraisals shall show the number of animals and the value of each per head or the weight and value per pound.

Section 5. When the appraised cattle have been slaughtered and the amount of salvage ascertained, reports in triplicate shall be made, signed by the appraiser and owner, showing the appraised value of the animals, the salvage obtained, the difference between the appraised value and salvage, the amount of money paid or to be paid by the state, county or municipality and the reimbursement to be paid by the Department; one copy to be attached to the voucher in which compensation is claimed, one copy to the state, county or municipality's authorities, and one copy to the owner of the cattle.

Section 6. Each owner of tuberculous cattle, which have been appraised, shall market them within thirty days and shall obtain from the purchaser reports in triplicate (T. E. Form 24) certifying as to the amount of salvage obtained. The owner shall also secure from the purchaser an affidavit (T. E. Form 25) showing the amount of money actually paid for the animals. This affidavit shall be attached to the voucher in which compensation is claimed.

Regulation 9. Claims Not Allowed.

Section 1. No payment shall be made for any animals destroyed on account of tuberculosis unless the owner has complied with all lawful quarantine regulations and the owners thereof shall have executed agreements in compliance with these regulations.

Section 2. No payment shall be made hereunder as compensation for or on account of any such animals destroyed, if, at the time of inspection or test of such animals, or at the time of the destruction thereof, it shall belong to or be on the premises of any person, firm or corporation to which it has been sold or delivered for the purpose of being slaughtered.

Section 3. The Department will not allow claims arising out of the condemnation of cattle for tuberculosis on a tuberculin-test applied by other than a Bureau employee or a regularly employed state, county or city veterinarian.

THE ASSISTANCE OF ALL IS NECESSARY FOR A SUCCESSFUL CAMPAIGN.

In order that the campaign for the eradication of tuberculosis from live stock may achieve the success it justly deserves, the full coöperation and assistance of all those who are interested must be obtained, and this is, especially, true in the case of the veterinarian engaged in private practice. He has been engaged in the tuberculin-testing of cattle for many years and has accomplished a creditable amount of good results, but it is believed that much more could be accomplished by having the work more uniform and under official supervision, as far as possible. It has been said that "the practicing veterinarian can not be expected to give the

campaign his full support when he is being deprived of some of the means of his livelihood, which are received from tuberculin-testing of cattle." When tuberculin tests are made by the state or Federal veterinarians the owner of the herd is not required to pay for the testing, and this may, of course, result in the practitioner losing some business. Under the present rules of the Uniform Plan for Accrediting Tuberculosis-Free Herds of Pure-Bred Cattle it is required that tuberculin tests be made by a veterinary inspector of the Bureau of Animal Industry, United States Department of Agriculture, or a regularly employed veterinary inspector of the state in which the coöperative tuberculosis eradication work is being conducted. However, the owner of the herd may employ his own veterinarian to assist in the test, or act as counsel, and such an action on the part of the owner is encouraged by the state and Federal officials engaged in this work. The veterinarian engaged in private practice is in a position to render very valuable service to this campaign, and it is felt that he will, in most cases, be very willing to make some sacrifices to this end. He is in a position to encourage the accredited herd plan, being in daily contact with the breeders of pure-bred cattle in his territory, and by encouraging the plan many owners will be induced to coöperate and place their herds under official supervision. The campaign is now a national problem, and must be officially conducted, but, as it will be impossible for the states and national government to furnish sufficient help to tuberculin-test all of the cattle in the country, the veterinarian engaged in private practice will, naturally, be employed by the owners to make tuberculin-tests in a great many cases. These veterinarians will be in touch with the official veterinarians, making it possible for them to consult, without much trouble, with these officials when necessary; and the plan of having official veterinarians stationed in various parts of the country will be the means of having tuberculin-tests uniformly conducted. No doubt the practicing veterinarian's business will, ultimately, be greatly benefited by the increased interest which will be aroused for healthier live stock in every section of the nation. This is the history of the veterinary practice in the areas from which the "tick" was eradicated. The time was when, in the South, a considerable part of the veterinarian's income was derived from fees obtained for treating cattle for tick fever and other work made necessary by the presence of "ticks"; but, as soon as the veterinarians of the South were aware that a campaign "was on" for the complete extermination

of the "ticks," they furnished valuable coöperation in nearly every instance. Intimately associated with "tick eradication" for eleven years, the speaker is proud to report that he never knew, nor has he ever heard, of one qualified veterinarian who opposed that work either on the ground that it was depriving him of his "bread and butter" or for any other reason. We will all work together in this great campaign with the same ideal to guide us, namely, to preserve, protect and perpetuate a greater and grander live stock industry in this the greatest nation in the world—a nation that will, if necessary, give millions of her sons and daughters, and every dollar it possesses, to preserve the rights of every citizen and the cause of liberty.

THE VETERINARY SERVICE OF THE ARMY OF THE UNITED STATES.*

Major JOHN P. TURNER, V. C. N. A., Washington, D. C.

The first mention of the word "Veterinary Surgeon" in Acts of Congress relative to the army is in the Act of March 3, 1863, abolishing the grade of "chief farrier" in regiments of cavalry and substituting the title of veterinary surgeon. He was given \$75.00 a month, with the rank of regimental sergeant-major. A decision dated March 23, 1864, that he was not entitled to rations evidently placed him outside of the enlisted personnel of the army, inasmuch as every enlisted man is entitled to a ration. Prior to this, the Act of July 29, 1861, creating a new cavalry regiment in the army, gave one veterinary sergeant, who was rated as a regimental non-commissioned officer.

It seems quite evident that the "chief farrier" was a regimental non-commissioned officer in the old dragoon regiments prior to the Civil War, and when these dragoon regiments were converted into cavalry regiments in 1861, the grade of chief farrier was still carried, and that the new regiments organized in 1861 and the organization that obtained in the volunteer cavalry regiments carried on its rolls a "veterinary sergeant." Farriers were provided in companies of dragoons by the Act of May 30, 1796. A later reorganization provided a farrier-major for each regiment of mounted troops, to superintend the farriers of troops. He was replaced later by a veterinary surgeon. On the roster of Pennsylvania regiments which participated in the

* Presented at Joint Session (War Session) A. V. M. A., Philadelphia, 1918.

Battle of Gettysburg July 1, 2 and 3, 1863, there were several regiments of cavalry and it is noticed on the beautiful memorial erected on this field of battle by the State of Pennsylvania in commemoration of its soldiers that the grade of "veterinary sergeant" existed in all the cavalry regiments.

The Act of March 3, 1863, produced a uniform title in all of the cavalry regiments of the regular army, but, as evidenced by the inscription on this monument, the old term, sergeant, still existed in the volunteer regiments. After the Civil War the army was reorganized and in this Act (July 28, 1866) four new regiments of cavalry were added to the army, two of which were to have colored enlisted men.

These four regiments (7th, 8th, 9th and 10th cavalry) were each given an additional veterinary surgeon, who received \$100 per month. The veterinary service in these new regiments costing the army \$175 per month and in the old regiments \$75 per month, yet the same number of horses and mules existed in each regiment.

A few years later the duties of these veterinary surgeons were given in an order which directed that they should visit the stables of their regiments at least once daily and advise the proper officer regarding the treatment of sick or injured animals and that they should instruct the farriers and horseshoers. In a later decision he was given the allowance of quarters, fuel and lights of a sergeant-major. He did not wear a uniform, as he was more of a civilian than a soldier. His position was very much like that of a veterinarian having a contract for the treatment of the horses of a large business concern.

He was appointed by the Secretary of War on the recommendation of the colonel of the regiment and could be removed in the same manner. He could resign at any time. No examinations were required. He had no protection and was not armed. He was not entitled to retirement for long and faithful service, as were both officers and enlisted men; neither was he nor his family pensionable should he be killed in the service or die of contagious disease or be permanently disabled by injuries.

He was without authority in the performance of his duties unless this authority was granted by either the colonel or the troop commanders. In other words, he was a hired civilian with a very anomalous, semi-military status.

Young men from the veterinary colleges would occasionally accept such positions, stay a short time, until they had acquired

some practical experience at the expense of the government, and then resign.

There were no reports to be made. No records of any kind were maintained. He simply doctored the animals.

No mention is made of veterinary service in other mounted branches of the service in the early history of the army.

It is known, however, that the Quartermaster's Department hired civilian veterinary surgeons at many large depots. These men were paid \$100 per month. This department had a grade known as inspector of animals and frequently appointed veterinarians to this position. The salary was \$1,800 per year.

The social status of the regimental veterinarians varied with the regiment and with the individual and in the same regiment with different colonels. In some regiments the veterinarian was treated as a civilian gentleman and as a member of a profession and was able to do a very fair grade of work and gave considerable instruction to both officers and enlisted men in classes in hippology and horseshoeing. In other regiments the opposite position regarding veterinarians was taken and he was largely interested in drawing his salary and engaging in civil practice.

Supplies were generally plentiful but badly selected and were issued to the troops.

Such was the condition of veterinary affairs in the army until after the Spanish War.

The many and varied veterinary problems presenting themselves to army officers, especially in the military occupation of Cuba and the Philippines, drew their attention to the lack of a proper veterinary organization in the army and in the Act of February 2, 1901, the profession received a slight recognition when they were promoted from the relative rank of a sergeant-major to that of the "pay and allowances" of second lieutenant, mounted, and two veterinarians were allowed to each regiment of cavalry and one to each battalion of artillery.

By a subsequent Act (March 3, 1901) veterinarians were permitted to retire as other officers and this opportunity was taken by several very old veterinarians to retire.

Veterinarians remained in this status for fifteen years. They were not commissioned officers, yet had all of their allowances and privileges, save promotion. They wore undress uniforms, but no shoulder straps.

This grade was only attainable by examination; all men in the service having been examined prior to promotion and those

appointed from civil life were required to be graduates of recognized veterinary schools and were appointed upon the results of a competitive examination.

The reorganization of the army by the Act of June 3, 1916, took all veterinarians from the cavalry and artillery regiments and Quartermaster's Department, merged them into the Medical Department of the army by creating in the latter a Veterinary Corps. This act gave the veterinarians the rank of second lieutenant and after five years' service they were advanced to first lieutenant, after a proper examination. A captaincy was given after fifteen years' service, and an examination, and the rank of major after twenty years' service. This act was very friendly to the veterinary profession, but was of small value to the service owing to the fact that no veterinary enlisted personnel was provided, and the veterinarian continued to be a supplicant to line organizations for enlisted assistants in his hospital and in his professional work in the stables of mounted units. This act provided veterinary service for cavalry, artillery and mounted engineer units, as well as for the Quartermaster's Department, in the inspection of public animals at the time of purchase and for the proper inspection of meat and milk.

The Act of May 18, 1917, gave the President of the United States authority to extend the military service during the war. Under this authority, General Orders No. 130 were issued by the War Department.

This order provided a Veterinary Corps of commissioned officers and enlisted personnel for the army. The commissioned officers of this corps included the veterinary officers of the regular army, the Veterinary Reserve Corps and the National Guard and National Army. This order provided one veterinary officer and sixteen enlisted men for every 400 public animals. The commissioned personnel to be provided in the following grades and ratios: seven veterinarians with the rank of major, twenty veterinarians with the rank of captain, thirty-six veterinarians with the rank of first lieutenant, thirty-seven veterinarians with the rank of second lieutenant. A recent decision of the Judge Advocate General ruled that the rank could be raised to that of colonel. The grades of sergeant (first class), sergeant, corporal, farrier, cook, teamster, saddler, private (first class) and private were provided for the enlisted personnel.

While the Act of June 3, 1916, provided for 118 veterinary officers from the rank of second lieutenant to major, depending

on their length of service, there were but fifty-eight veterinary officers in the army when the United States declared war against the Imperial German Empire, April 6, 1917, and no veterinary enlisted men. At this time there was no organization of the Veterinary Corps; officers were assigned to various combat units and to the Quartermaster's Department. A major of the Veterinary Corps was ordered to duty in the office of the surgeon general during the spring of 1917 to look after veterinary matters. The almost superhuman task of organizing a veterinary corps in time of war, when it had to be expanded from 58 officers to 2,000 officers and 20,000 enlisted veterinary men, presented itself to the service. It was called upon to model after a service and fit into one which had been over 100 years in its making.

The veterinary service called for civilian help, as did all the other branches of the army, and it is not amiss here to say that the veterinary profession has responded splendidly, giving its most experienced and valuable men to the nation's service.

A number of civilian veterinarians, all of whom were familiar with veterinary administrative work, together with the veterinary officers who were on duty in the office of the surgeon general, began work on an organization of the proposed veterinary corps and resulted in the issuance of General Order No. 130, October 14, 1917, which directs that there be provided for the National Army one veterinary officer and sixteen enlisted men for each 400 horses. Special Regulations No. 70, governing the army veterinary service, were approved December 15, 1917, for the information and guidance of the army. This publication may be said to be the keystone of the veterinary organization, for it gave the corps specific instructions as to its duties.

Lieutenant Colonel J. J. Aitken, of the British army veterinary service, arrived in November, 1917, and gave the veterinary service the benefit of his many years' experience. His advice for five months in preparing various forms and returns and in general organization and management were of the greatest aid to the American service and its appreciation is hereby acknowledged to this very efficient veterinary officer.

Special Regulations No. 70 give very specifically the objects of the Veterinary Corps in the following language: "The objects of the Veterinary Corps are to protect the health and preserve the efficiency of the animals in the army."

These objects are to be attained:

- (a) Preventing the introduction or extension of communicable disease. .
- (b) Reducing losses from illness or injury by the prompt application of proper treatment.
- (c) Relieving the mobile (fighting) organizations, in the zone of the advance, of the sick or injured animals which might impede their movement.
- (d) Treating in hospitals, or lines of communication, the animals which can be restored to a serviceable condition.

The Veterinary Corps also provides for the inspection of meat-producing animals before and after slaughter and of the dressed carcasses, and for the inspection of the dairy herds supplying milk to the army.

The veterinary service is organized and functions as follows:

VETERINARY CORPS—HEADQUARTERS.

The Veterinary Corps is administered through its headquarters, where all orders relative to the service are prepared and issued.

All records of army veterinary activities are also kept here.

Many bulletins regarding military veterinary matters have been prepared here and issued to veterinary officers for their guidance and instruction.

General Inspection Service.—Five zones have been established in the United States, to each of which is assigned a major of the Veterinary Corps for the purpose of general inspection and observation of all veterinary and animal activity in their respective zone. These inspectors report direct to the surgeon general, United States Army, and are not attached to any local organization.

They recommend corrective measures wherever necessary to produce greater efficiency among animals. They inspect the animals of all mounted troops at cantonments and all animals at auxiliary remount depots and ports of embarkation. They likewise inspect the sanitation of hospitals, stables, yards, corrals, depots, stock yards, sales stables, or any place or anything which has to do with creating more efficiency among army animals. Their duties also require them to inspect veterinary officers and enlisted men, to make reports on their efficiency, and to instruct them on military veterinary matters where necessary.

Meat Inspection.—The inspection of all meat and meat products for the army is made a duty of the Veterinary Corps by Act of Congress. This inspection begins at the place of preparation of the food and covers the selection, inspection, covering, weighing, stamping, refrigerating, and loading of all meats.

The selection, cutting, boning, soaking, pickling, sorting, canning, testing of cans, examination of lacquering and packing of all meat products is a part of this meat inspection. The inspection of canned milk, cheese and butter is also provided for. For this inspection at the large packing centers there are over fifty veterinary officers on duty and forty veterinary student officers as assistants. At the distribution end, the inspection is made by either the division meat inspector or camp meat inspector, both of whom are veterinary officers.

Veterinary officers also supervise the loading and unloading of meat on ships at ports of embarkation and also the storage of meat in the immense refrigerating plants provided for receiving and storing army meat and meat products.

The veterinary officers assigned as division and camp meat and milk inspectors also inspect local dairy farms supplying milk to cantonments; tuberculin testing the cows on these farms and making a sanitary inspection of the barns, milk rooms, employees on the premises in general.

Training Camps.—These have to do with the military training of officers and enlisted men for the veterinary service.

The school at Camp Greenleaf, Ga., is attached to the medical officers' training schools and has the benefit of its organization and equipment, particularly for the training of veterinary officers. At this camp a small number of enlisted men are given training. The school at Fort Riley, Kansas, trains a limited number of enlisted men of the Veterinary Corps, its specialties being horseshoeing, baking and cooking. The largest camp is the veterinary training camp at Camp Lee, Virginia, where eighty veterinary officers and over 3,000 men are undergoing a very intensive system of training. The purpose of this school is largely the organization and training of the commissioned and enlisted personnel of veterinary hospitals and army and corps mobile hospitals.

These units are trained, organized and completely equipped at this school and are ready for active service when they march from this camp.

The training is both military and veterinary. Veterinary officers are trained to drill the hospital companies in cavalry drill. They receive instruction in guard duty, camp sanitary duty, making camps, stable duty and in the various useful knowledge that a soldier must know in the field.

The veterinary officers receive a course in equitation, saddling, biting and the principles of draft. Lectures and practical instruction are given in the care and treatment of army animals on the march, in the field and in the hospital. This course is given to both officers and enlisted men. Enlisted men are taught to be veterinary soldiers in every sense of the word.

Lectures and practical work in horseshoeing, casting, bandaging, dressing wounds; the movement and care of horses by rail and sea; the movement of animals suffering from gunshot wounds.

The recognition of contagious disease is taught these soldiers in a thorough manner, as are also the principles involved in sanitary police.

The training is by lectures and quizzes and is accomplishing wonderful constructive work, which will be a credit to the army and the veterinary service when it gets into action.

At this school a veterinary hospital planned by army veterinarians is being built for the practical training of veterinary soldiers. This hospital has a capacity for 500 animals, but is so arranged that it can be enlarged into a complete veterinary hospital with a capacity for 1,000 animals.

VETERINARIANS ON DUTY WITH COMBAT UNITS.

At present, this organization is limited to the veterinary organizations of the typical division. This service consists of one division veterinarian and eleven veterinary officers attached to organizations having animals.

The enlisted force is fifty-one men to each division, equipped as cavalry.

The division veterinarian can advance to the rank of major. The division meat inspector can be either a first lieutenant or a captain.

Two veterinary officers (first or second lieutenant) are attached to each horsed regiment of artillery; one veterinary officer to each infantry brigade and three veterinary officers to the divisional trains. One veterinary officer has command of the division mobile section with twenty-one enlisted men in his force.

The division veterinarian is on the staff of the commanding general of the division, and is responsible to him for the efficiency

and training of the veterinary officers and enlisted personnel, as well as for the veterinary service on the division. He conducts schools of instruction for veterinary officers and sees that they are properly drilled and trained as soldiers, and they in turn pass along this information to the stable sergeants and the enlisted men in the units. The division veterinarian reports direct to the commanding general on all military veterinary matters. The division veterinarian has a division meat inspector, who is a veterinary officer, and three enlisted men.

The typical veterinary unit consists of one veterinary officer, two farriers and one private, or private first class.

The duty of the veterinary officer of these units is to constantly inspect public animals for contagious disease, correct any defects in shoeing, feeding, or stable sanitation; to observe that harness and saddles are properly fitted and cared for; give instruction in stable hygiene to junior officers and stable sergeants; care of minor injuries and sickness and evacuate all serious cases of any kind to the division mobile section, which either cares for such cases or in turn evacuates patients to the veterinary hospitals on the line of communication, depending on how long a period will be required to make the animal serviceable.

Remount Service.—Adjoining each cantonment and at each port of embarkation is an auxiliary remount depot for the reception of public animals after purchase and care of them until issued to troops and for their reception if troops evacuate without their animals.

At these depots certain veterinary officers and enlisted men are assigned by the War Department. The typical veterinary unit at a remount depot is six veterinary officers and seventy-five enlisted men. The number, however, is flexible, and can be increased as the depot increases in importance.

The senior veterinarian at the depot is known officially as "The Veterinarian," and has a command very much the size of a cavalry troop in the army in peace times. The Veterinarian is responsible for the veterinary service at the depot and must assign his officers and men to the greatest advantage. He is also the veterinary sanitary officer of the depot.

Usually one veterinary officer and a veterinary detail are ordered to ride the corrals on diagnostic work.

One officer is detailed to the surgical ward of the hospital and the others to the contagious and non-contagious wards and on duty in the remount shoeing school as instructor. It is a position

which requires ability, both from a veterinary and administrative standpoint, and much tact.

As a company commander, he is responsible for the drill and discipline of his detachment and for the proper feeding of his men and care of their barracks.

All animals are inspected on arrival and malleined as soon thereafter as is possible. This is again repeated prior to issue to commands.

He is responsible, under the commanding officer of the depot, for the reception of sick or injured animals from the division into the hospitals at the remount.

VETERINARY INSPECTION—PURCHASING SERVICE.

The Veterinary Corps has one officer on duty as special liaison officer to the remount division, Quartermaster Corps. His duties are largely supervisory in regard to the activities of veterinary officers on remount purchasing boards. Veterinary officers are assigned to this service in the various purchasing zones of the country. They examine all animals for soundness prior to purchase and mallein-test all animals which have been accepted, prior to purchase.

TRANSPORT SERVICE.

A veterinary officer is attached to the staff of the commanding general at each port of embarkation. He is responsible for the inspection and sanitation of every animal transport leaving the port. He assigns transport veterinarians to each transport. The veterinary officer on the transport is responsible for the care of the animals during the outgoing trip and for the cleaning of the boat on the return trip.

VETERINARY SUPPLIES.

This important service is a part of the administrative branch of the Veterinary Corps and has to do with the purchase and issue of veterinary instruments, medicines and supplies for the veterinary hospitals.

With practically nothing on hand at the beginning of the war, this division has been organized and is now supplying combat units, hospitals at remounts and abroad, with a modern equipment of veterinary instruments and supplies adapted for army use and put in containers which will be serviceable and readily packed.

Officers' and men's wallets are provided for mounted use. Expandable veterinary unit chests, cheaply—yet serviceably—

constructed and easily packed, are issued to all veterinary units. This chest contains supplies for first-aid work. A veterinary officer's chest is issued to each officer on duty with mounted troops; this contains instruments and supplies. The mobile sections have four unit chests. The large veterinary base hospitals and hospitals on line of communication have seven large and completely equipped chests with a very complete equipment of instruments, medicines and supplies.

A great deal of ingenuity has been exercised in preparing and arranging these chests in order that they may serve as a complete equipment, yet be compact, easily packed, and stored for transportation purposes.

VETERINARY LABORATORY SERVICE.

The principal veterinary laboratory of the army veterinary service is located in Philadelphia, Pa., from which point several veterinary officers who have been specially trained in army diagnostic methods have been ordered to each department laboratory in this country. Their work is largely the examination of blood for the complement fixation and agglutination test. Specimens of tissue, scrapings, etc., for mange mite, and other work of this type are sent to these laboratories.

CERTAIN ASPECTS OF THE PATHOLOGY OF SPAVIN.*

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A world of knowledge may be gained at necropsies by routine examination of the joints. It will be found that inflammations of the joints are more common in horses and cattle than is generally supposed. It will be found that these inflammations usually affect more than one joint in the same animal and that in cases where a diagnosis of lameness was made in a certain joint, other joints were equally, and in some cases more severely, involved than the one that was diagnosed antemortem as having been inflamed. Finally, it will be found that apparently healthy animals in numerous instances show joint lesions.

The lesions most frequently found are fibrous outgrowths on the synovial membrane and erosions on the articular surfaces. Both of these changes are of such common occurrence that they were considered as normal structures. Bürki explained that the erosions on the articular surfaces in cattle are a result of growth. He wrote that the bone grows faster than the cartilage, causing

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the center of the cartilage to become thinner and finally disappear. Numerous histologists consider the fibrous growths on the synovial membrane also as normal structures.

A systematic study of joint lesions has shown that the growths on the synovial membrane are due to an organization of a fibrous exudate in the joint. They are at first composed of fibroblasts and richly supplied with young blood vessels. In later stages they are composed of fibrous connective tissue containing a few blood vessels and covered by mesothelium. Occasionally, during the organization of the fibrin, some of this granulation tissue is transformed into cartilaginous or bony tissue, thus accounting for the free bodies very often found in joints.

The erosions on the articular surfaces are the result of mild or severe irritants and are preceded by degeneration of the articular cartilage. They may begin on the articular surface and work down toward the bone or they may begin by a vascularization of the cartilage from the subchondral bone. In some cases both of these processes were seen simultaneously. The bases of these erosions may be reddened or yellowish, depending upon the age of the process. In some cases they may be whitish, due to a growth of connective tissue in these erosions.

Other changes encountered are a thickening of the capsular ligament and ankylosis of the two adjacent bones. The capsular ligament may be thickened by an œdematous connective tissue, dense connective tissue, connective tissue containing areas of cartilage and of bone, and in several cases the capsular ligament was found to be entirely ossified. The ankylosis may be so widespread as to include nearly the entire joint or it may be confined to small areas a few millimeters in diameter. The ankylosis may be by loose vascular connective tissue, by dense non-vascular connective tissue, by connective tissue containing areas of proliferating cartilage cells or areas of ossification. Finally, the two bones may be grown together by dense bone.

These changes occurring in the hock joint comprise what is known as spavin or bone spavin, but the interpretation of these changes is not so simple. An inflammation is a local reaction to an injury and spavin is a certain inflammation of the hock joint, hence in order to consider the changes found as spavin, they must be active. An active reaction to a mild irritant is indicated by the presence of fibroblasts or newly forming blood vessels. Active hyperæmia, hemorrhage, or exudation of fibrin, pus or serum indicate a local reaction to a more severe irritant. Cases where

signs of activity are lacking must be considered as quiescent, *i. e.*, where there was an inflammation at some previous time but which had subsided and now it is merely history. Another thing that must be remembered in this connection is that spavin is seldom fatal and that hyperæmia present in the subchondral bone may be due to the cause that produced the death of the animal and not a sign of activity.

The causes of spavin as previously given are hereditary predisposition, certain conformations of the animals such as heavy musculature, and mechanical irritants. Many cases have been encountered where exudation, erosion of the articular ends and hyperæmia and hemorrhage on the synovial membrane of the hock joints were present in newly born foals. In these cases pressure and stretching of ligaments as the cause may certainly be excluded. Besides, these changes are usually due to bacterial irritation. In numerous instances spavin was traced to umbilical infection. Umbilical infection is rarely found in dog and cat, and joint lesions, unless caused by fracture or other positively identified mechanical means, are just as rarely found in these animals. The reason for this may be that these animals are more immune to ordinary infection.

Recently the joints were examined in a number of calves that were used in obstetrical exercises. These calves appeared healthy in every respect, yet lesions were found in the hock joints, while all the other organs were apparently normal. The lesions found in these cases were hyperæmia of the synovial membrane, a reddened synovia, reddened erosions on the articular ends covered by a reddened fibrinous exudate. Microorganisms were found in some of these, while culture media inoculated from others remained sterile. This fact makes it seem possible that in many instances, unrecognizable umbilical infection exists where, due either to the small number of the invading organisms or to their lesser virulence, the irritation is so mild that the spavin is not recognized until the animal reaches the age of a year or two.

The history in many cases of lameness is not very reliable. I can recall several instances where the owner claimed that the animal went lame after a certain slip on the ice. The lameness gradually grew worse, finally posterior paralysis set in and the destruction of the animal followed. On autopsy, a tumor was found pressing on the trunk of nerves supplying these parts. In this case, fortunately, the cause was seen with the unaided eye. What about those that cannot be seen? A slip on the ice might

produce a sprain, an injury to the ligaments and subsequently a chronic periostitis. Such cases have been encountered and while in those the joints were not affected, it is possible that such an inflammation may spread to the joint and produce a true spavin.

Aside from umbilical infection, spavin may be a sequel to diseases of other organs. It is well known that the sequelæ of acute pneumonia, pericarditis, pleuritis, peritonitis, metritis, an ulcerated tooth or other suppurating foci, are often joint lesions. Consequently, spavin may follow any of these conditions. In this case the cause would be metastasis of microorganisms just as true as in the case of umbilical infection. This view is further strengthened by experimental evidence. Lesions similar to those found in spavin were produced in dogs and in pigs by inoculation of microorganisms. These experimental data, the early changes being those of infection, and the actual finding of microorganisms in many instances lead to the belief that spavin is very often caused by infection.

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THE CHLORAMINE ANTISEPTICS AND DISINFECTANTS.*

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This great world war that is now being fought is only one phase of the eternal struggle between living organisms for existence, and it is a struggle that will continue as long as life exists. After the roar of cannon has died away, the poison gas evaporated, and the submarines are rusting on the ocean's bed, the struggle for existence will continue. The present war, as we see

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it, appears to be a struggle between organisms of the same animal species, man fighting and killing his fellow man, each bringing to his aid the most powerful and deadly weapons that his inventive genius can devise. There is, however, another struggle just as desperate being fought out in the hospitals and dressing stations, the fight to preserve human life against the attacks of organisms so small that the unaided eye cannot see them and yet a foe that has caused more devastation to the human race than wars and accidents combined. In previous wars it has not been the human foe that has caused the greatest loss of life, but, rather, those insidious but effective organisms that we call pathogenic. The surgeons in the dressing stations and hospitals are the officers who are leading the defensive forces for the preservation of human life against the attacking hordes of disease and death-producing microorganisms. It is well established that if it were not for microorganisms, wounds would not be serious or fatal unless some vital organ is mechanically crippled. Every surgeon knows that the seriousness of a wound does not depend upon its extent alone. Minute and often insignificant wounds, when infected by a virulent organism, are always serious.

It is not to be assumed that the struggle between man and microorganisms is confined to war conditions. This is only one phase of the eternal struggle for existence, a warfare that will not be settled by diplomatic negotiations or a treaty of peace but that will continue as long as life exists. The fittest will survive, and if we are the fortunate victors, we must bring to our assistance the most efficient aids that the mind of man can devise. We must consider antiseptics and disinfectants as weapons, that man because of his superior power has produced and made available for the destruction of certain lower forms of life and particularly bacteria that prey upon mankind and also upon the higher animals that we as veterinarians must protect and conserve for the use of, and therefore for the existence of, the human race.

In the introduction to *A Handbook of Antiseptics*, Dakin and Dunham say: "Strictly speaking, an antiseptic is a substance which inhibits the reproduction of microorganisms, but it need not manifest great 'germicidal' or killing action on such organisms * * * Most substances used in the prevention of wound sepsis possess both germicidal and antiseptic properties, though perhaps they are most commonly called antiseptics.

"The term "disinfectant" should clearly connote a substance which destroys infecting agents and hence is identical with a

germicide, but the word has come to be used in a popular sense, irrespective of complete sterilization, to indicate some of the phenomena commonly associated with efficient disinfection, such as a deodorant effect. The use of the words 'disinfectant' and 'disinfection' in any other than that first indicated is to be deprecated."

At the outbreak of the present war a tremendous problem of gross infection of war wounds confronted the army surgeons. The soil of Flanders had been fertilized for centuries with human and animal excrement and under modern war conditions wounds were infected to a degree never before experienced.

Colonel Sir Berkeley Moynihan of the British Army Medical Service says: "Whether a surgeon had practiced 'aseptic' or 'antiseptic' surgery * * * he had rarely seen a profoundly septic wound. Suddenly he was confronted with a long succession of cases in which a raging and often rancid suppuration was present, and he found that all the old remedies upon which he had so comfortably and confidently relied were hopelessly inadequate and futile. A challenge was, so to say, thrown to the medical profession and I think we may now with due modesty claim it has been splendidly and triumphantly met."

And again:

"Among these (methods of antiseptic treatment) pride of place will be cheerfully and gratefully conceded to the Carrel-Dakin procedure."

The challenge to the surgeon was promptly accepted by some of the ablest scientists in this and other countries, including such men as Dr. Flexner, Sir Almroth Wright, Drs. Carrel, Dakin, Daufrense, DeHelly, Dumas, Prof. Pozzi, and others. Carrel and Dakin experimented with more than 200 of the best known antiseptics before they perfected the hypochlorites solution.

It is not claimed that the use of chlorine-carrying compounds as antiseptics is a new discovery, but the chlorine compounds have been perfected in form and some new chlorine compounds have been discovered, so that altogether it may be stated that these embrace the greatest medical discoveries of the war so far announced.

The ideal antiseptic is a substance that inhibits the growth of invading microorganisms, but does not irritate or injure the cells of the animal body. It should also be a substance that is of practical application. While the ideal has not been attained, it has been approximated more closely by the chlorine-carrying anti-

septics than any other, as demonstrated by their extensive use and the splendid results obtained in the war hospitals of France, Great Britain and America. Practically all of the well-known antiseptics used previously are toxic and their antiseptic action is due to their direct toxic effect upon the invading microorganisms. The chlorine-carrying antiseptics are synthetic compounds in which the chlorine is loosely combined with hydrogen in a form called "active chlorine." When these compounds called "chloramines" are brought in contact with proteins, a nitrogen atom in the protein is replaced by a chlorine atom, and according to Dakin and Dunham, "This chlorination of bacterial protein seems to be incompatible with the life of the organism."

The chlorine-carrying antiseptics are divided as follows:

Hypochlorous acid and the hypochlorites. These are unstable, aqueous solutions and are used for irrigating wounds. They must be freshly made and used in a strength of from .45% to .50% of 1%. They are somewhat irritating. These solutions dissolve necrotic tissue to an unusual degree and also blood clots. Secondary hemorrhage must, therefore, be guarded against. These solutions are efficient and economical, particularly for hospital use. Ensol, one well-known form, is a combination of hypochlorites and boric acid in solution. Neutral hypochlorite solution (Dakin's solution) is a preparation of sodium hypochlorite neutralized with sodium carbonate.

To overcome some of the disadvantages of the hypochlorous and hypochlorite solutions, Dakin and others devised a synthetic chlorine-carrying substance, sodium-toluene-sulphon-chloramide, introduced abroad as Chloramine-T and in America as Chlorazene. "It is a crystalline, odorless substance containing 12.6% of chlorine. It is readily soluble in water and the solutions that have a bitter taste are stable, neither moderate exposure to heat or light causing decomposition. In equimolecular solutions, its germicidal activity is about four times that of sodium hypochlorite."—*Handbook of Antiseptics*.

Chlorazene can be used in aqueous solutions of $\frac{1}{4}\%$ to 2%, according to indications. It is less irritating and more stable than the hypochlorite solutions. A solution of 1:500,000 kills staphylococci in water as compared with a phenol solution of 1:250, while staphylococci in serum are destroyed by a 1:1,500 solution of Chlorazene as compared with a 1:50 solution of phenol.

It must not be inferred that the excellent results obtained by the use of the water soluble chlorine antiseptics are due entirely

to the antiseptic itself. The Carrel method of using by intermittent installation every two hours is a very important factor, and Dr. Sherman says that "Devers dictum, 'He who drains well, does surgery well,' must be changed to 'He that does Carrel well, does surgery well'."

The important feature of the treatment is a frequent flooding or irrigation of the wound, either with a Carrel apparatus or by saturating gauze. This is essential to success.

Chlorazene or Chloramine-T is also used in a sodium stearate base as a surgical paste, where the wound is only lightly infected.

Another chlorine-carrying antiseptic that is giving most excellent results in the treatment of war wounds is toluene-parasulphondichloramine, generally known as Dichloramine-T. This was first prepared by Chattaway and occurs in yellowish white crystals, and has a faint chlorous odor. It is practically insoluble in water but is readily soluble in an oil made by chlorinating paraffin wax. This oil is called Chlorcosane and is superior to chlorinated oil of eucalyptol, as the Chlorcosane is non-irritating.

The advantages of the Dichloramine-T-Chlorcosane solution is that the chlorine is slowly liberated and maintains a continuous antiseptic action for from eighteen to twenty-four hours, thus avoiding the frequent attention necessary with the aqueous chlorine solutions. Dichloramine-T in Chlorcosane can also be used in a much stronger solution of from 5% to 8%. Only a small quantity of this antiseptic is necessary, and it can be applied with an atomizer syringe or sterile swabs. If protective dressings are used, they should be light to avoid absorption of the antiseptic by capillarity. Dichloramine-T is fairly stable in Chlorcosane if kept from light and heat. It is best to make up the necessary quantity of the solution every four days.

It is not necessary to call attention to the splendid results obtained by the use of these chloramine antiseptics in the allied hospitals during the present great struggle. They are also giving correspondingly good results in veterinary practice where properly used.

It has been our observation that in badly infected wounds, or wounds discharging considerable pus, the aqueous solutions used freely and frequently give the better results. In wounds where the oil solution can be applied directly to the infected surface, or where it is desired to close a wound immediately, the Dichloramine-T in Chlorcosane is preferable. It seems probable that these

chloramine antiseptics will replace most of the antiseptics for general use.

One of the great problems in connection with war has been the sterilization of drinking water necessary for troops under widely varying conditions. For this purpose, Dakin and Dunham have devised a chloramine compound disinfectant, para-sulphon-dichloramine-benzoic acid. To this substance they have given the name of Halazone. From extensive tests they have shown that "a concentration of 1 to 300000 is sufficient to sterilize an ordinarily heavily contaminated water in thirty minutes." Halazone is non-toxic and the indications are that this new substance will prove of great value not only in the army but among civilians.

As we view these new chloramine antiseptics and disinfectants, they will continue to be of inestimable value in saving and protecting human and animal life against the armies of devastating microorganisms that we have, like the poor, always with us.

EXPERIMENTS IN CAPONISING FOWLS.*

*(With Notes on Regeneration of the Testes and
Hormonic Influence.)*

By D. F. LAURIE, Government Poultry Expert,
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During recent years, consequent upon the ever-widening field of the work of the genetist, much attention has been given to the varying results of the operation of orchectomy, commonly called caponising in referring to poultry. Bond (*Journal of Genetics*, September, 1913) published an account of "Some points of genetic interest in regeneration of the testes after experimental orchectomy in birds." This revived interest in some experiments made by the writer some 30 years ago before much was known of the subject, and before the Hormone theory was thought of. In subsequent dissection of cockerels, from which I had carefully, as I thought at the time, removed the testes, regeneration was found to have taken place. Subsequent experiments, confirmed by others at various times, showed that what is known as intra-capsular removal is responsible for regeneration. It was at one time thought sufficient to destroy the testis by breaking it up (extirpation) and removing as much of the contents as possible. Subsequent experiment has shown that in such operations the

* Journal of Agriculture of South Australia.

whole part of the capsule may remain *in situ*, and will regenerate the secreting tissue of the testes and *tubuli seminiferi*.

During the year I decided to conduct afresh some experiments in this direction, and for the purpose selected cockerels of each of the following breeds:—White Leghorn, Rhode Island Red, and Barred Plymouth Rocks. Each bird was weighed, legbanded, and operated upon, and in due course made satisfactory growth. In certain cases one testis was left intact, in other cases both testes were completely removed, and again in some cases the removal was intracapsular. It was soon seen that those birds in which complete removal of both testes had taken place, were exhibiting the characters of normal capons. In all the others the comb and other secondary sex characters were practically normal, as in males of those breeds which had not undergone the operation. Further work is being carried on, but for the purpose of the present note sufficient has been done. It is well known that castration has the effect of inhibiting or greatly modifying the secondary sex characters. In the case of capons there is a noticeable lengthening of the limbs, and the feathering is longer and more abundant. The head has a "sexless" look, as it is neither that of a male nor that of a female..

WHITE LEGHORNS.

Three birds were killed and carefully dissected. In life they appeared rather heavier-bodied and with more abundant plumage than usual to the poultry station type. These slight modifications were alone noticeable. The head, comb, &c., were those of normal cockerels of the age, fully developed. The results found were as follows:—No. C.50.—Right testis was not removed and was fully developed. Left testis has been completely removed, and exhibited no sign of regeneration. No. C.53.—During the operation of orchectomy both testes were broken; the right testis was removed in several sections, and the left testis appeared to be completely removed in two pieces. Examination showed that the right testis had undergone regeneration, and was full-sized and lobate. The left testis was the size of a small pea, globular, and had evidently regenerated from a minute particle of testicular substance (cells, &c.). This operation would be intracapsular. No. C.59.—The history of this bird was similar to that of C.53, and it was found that the right testis was fully regenerated and characteristically lobate, and that the left testis had developed to about half normal size.

RHODE ISLAND REDS.

These three birds had fully developed secondary sex characters, and appeared to be normal specimens. No. C.38.—The right testis had regenerated, but was lobate in a marked degree, and was further attached by numerous adhesions to surrounding tissues. This was the only case of many dissected in which these adhesions were so much in evidence. The left testis was absent; it had been completely removed. No. C.40.—The right testis had regenerated and was about one-quarter normal size; lobation was marked. The left testis was absent. No. C.54.—The right testis had regenerated to about normal size and lobate, and was remarkable for a lobular bud about 1cm. in diameter.

BARRED PLYMOUTH ROCKS.

No. C.41.—Right testis regenerated, lobate condition not so marked. Left testis regenerated in trilobate form almost as if three spherical growths had arisen from three distinct foci. No. C.30.—Right testis regenerated in two lobes, and on second lobe a bud-like growth 2mm. in diameter. No. C.53.—Both testes were showing early stages of regeneration and growths 9mm. to 10mm. long by 6mm. in girth were seen.

All the birds had fully-developed combs, wattles, &c., and the plumage was normal. C.53 is of interest as indicating that even when there is only relatively minute growth in regeneration of testes the secondary sex characters are well developed. Evidently the internal secretion in minute quantities functions in this respect.

In all the foregoing cases the birds exhibited the usual sex habits, indicating no apparent absence of sex vigor and habit. In fact, they were becoming a nuisance owing to their depraved habits. The fact that in each case the testes were both (with the exception of No. C.50) either completely removed intracapsularly, and that regeneration had taken place shows the marked difference between birds and mammals. The effect due to internal secretion does not seem affected where regeneration has taken place, nor where one testis has been completely removed.

ORGANS OF INTERNAL SECRETION AND HORMONIC INFLUENCE.

The testes of the male and the ovaries of the female are recognised as organs of internal secretion. They elaborate substances akin to enzymes, hormones, which produce profound effects upon growth, general development, characters, &c., and in some cases interaction takes place. The removal or the loss or modification

by disease or design may have far-reaching effects upon the organism or primarily upon another organ of internal secretion.

In the case of the testes, total extirpation, including the removal of the capsule, removes from the bird the organs which elaborate the hormones which influence the development of the secondary sex characters of the male. In the case of ovariectomy or the extirpation of the ovary of the hen a more complex case is in point. While like results are recorded as regards similar operations on mammals, &c., we are now concerned with the hen, which has but one functioning ovary, whereas the mammal has two. Extirpation of the ovary in the hen has been effected by the application of the cautery, and in some cases there has followed assumption of male characters, and subsequent dissection has shown the development of a gonad, or testis. The ovary has its origin in the Graafian follicles, and it is evident that these regenerate, normally, in the domestic fowl at any rate. It is thought that this may be due to the development of the laying capacity of the domestic hen. There is reason for believing that selection has played a part in regard to the sperm-forming capacity of the regenerated male sex gland in the fowl, *i. e.*, that the cell divisions of the mother sperm cells left after the intracapsular operation provide new spermatozoa during regeneration. Partial removal of the ovary may result in degeneration. Damage or disease may destroy the ovary and so remove from the body the source of supply of the hormone inhibiting the appearance of male secondary sex characters—of plumage, of comb, and the habit of crowing. This gives warrant to the Mendelian belief that femaleness is a supernumerary character to maleness—take that character from the female and you have the male. The character in the point in question is influenced by an inhibiting hormone.

The opinion held by some people that the right or left testis of the male influences the sex of the offspring has had ample practical proof of its fallacious nature. Likewise as regards the ovary. Hens have but one functioning ovary—the other is only found in the embryo—and the hen produces both sexes. Doncaster and Marshall proved the latter point in their experiments with rats.

Again, the layman knows nothing of the unilateral development and so-called hermaphroditism, complex considerations not within the ambit of the present note. There are other organs of internal secretion—the ductless glands, which are influenced by

orcheectomy. They are the thyroid, the thymus, and the pituitary and pineal glands.

The *thyroid* gland is in the neck and is found in all craniate vertebrates. It arises as a ventral out-growth of the pharynx, and contains epithelium-lined vesicles filled with a colloid substance. The secretion of the thyroid gland is of great importance to general metabolism and growth. Disease or disturbance of its function leads to cretinism and other abnormal conditions. The *thymus* is in the lower part of the throat and in adults it generally disappears or becomes rudimentary normally. It is formed in the embryo from the epithelium of one or more of the gill clefts. The action of this gland is important to general metabolism and nutrition. A deficiency of gland substance may lead to anæmia, hæmophilia, chlorosis, and other abnormal conditions. In poultry it no doubt plays an important role in reference to uric acid and kidney secretions.

The *pituitary* is a small, oval, reddish-grey body attached to the infundibulum of the brain. It affects the metabolism, especially of the connective tissue and bones. Milk-secretion is controlled by a hormone from the pituitary body (Schafer). The *pineal* gland is a small, reddish-grey, vascular body situated behind the third ventricle of the brain. The dissection of the head of *Sphenodon punctatus* led to the knowledge of the origin of this body in vertebrates. Kidd says of this gland:— "There seems to be some antagonism between the pineal and pituitary bodies, as removal of the testicles produces atrophy of the former and hypertrophy of the latter. The pineal body appears to have two distinct functions, the first being a restraining influence on sexual development, which ceases at puberty; the other an unknown influence on general metabolism which continues through life."

The *suprarenal* gland (the capsule of the kidney) produces the well-known adrenalin, epinephrin, &c., used for many medical purposes. These are specially important.

Sir E. A. Schafer says:— "The internally secreting glands (thyroid, parathyroid, suprarenal, pituitary) have no other function so far as is known than of producing chemical substances of the nature of hormones, influencing other organs to which they are conveyed by the blood."

Hormones are thought to have the power to correlate and co-ordinate the various body functions (pregnancy, mammary secretions, &c.), but they also destroy toxins and they control one another; this is the hormone balance. In studying the physiology

and development of the chick and of the young mammal one finds the influence of internal secretions at every step.

The administration of various extracts and principles of the organs of internal secretion (organotherapy) in the treatment of various diseases is a strong feature of modern practice. The physiological and other effects constitute some of the most interesting problems of the modern experimentalist.

ADVISES CLOSE WATCH AGAINST FOOT AND MOUTH DISEASE.

Public officials, veterinarians, and stock owners should be on guard to report immediately any cases of foot and mouth disease that may appear in this country, according to a statement by Dr. J. R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture. Dr. Mohler said:

“Recent cable news announces an outbreak of foot and mouth disease in England which brings to mind the serious outbreaks of that disease which have been experienced in the United States.

“Foot and mouth disease has appeared in England from time to time, as it has done in the United States. In both countries the past outbreaks have been promptly controlled and eradicated and no cases have occurred in the United States since 1916. Nevertheless, the disease makes its appearance at irregular intervals. In this country we may expect its return at any time, although every precaution is being taken by the Federal authorities to prevent the introduction of the disease, especially from the present outbreak in England. So long as communication is maintained with other countries the danger of the reintroduction of the disease must be acknowledged.

“It is of the greatest importance that a sharp watch be maintained by all officials, by practicing veterinarians, and by stock owners in order that the very first cases may be discovered and the spread of the disease prevented. It would be a great misfortune to the United States if foot and mouth disease should occur under present conditions or become firmly established in the country, as has been the case in many of the stock-raising nations of continental Europe. Early discovery of the disease, followed by prompt elimination of infected centers, is the only way to prevent the United States from becoming permanently infected.”

CLINICAL AND CASE REPORTS.

NECROBACILLOSIS IN HORSES AND MULES.

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The paucity of literature on Necrobacillosis in the horse and mule prompts me, after several months of close observation of the various forms of the disease, and the treatment, and results obtained from same, to give to the veterinary profession some idea of the experience of army veterinarians in combatting this disease. At the beginning of the outbreak of this trouble veterinarians were handicapped by a lack of knowledge as to the proper



Necrophorus infection in region of pastern and coronet terminating in necrosis of lateral cartilage.

methods of handling the situation. Great losses of animals occurred at the various army camps throughout the country. At one camp alone 80% of deaths during the two months of July and August were due to the *Bacillus necrophorus*. This should be sufficient evidence that many bad results were obtained which were of no benefit to the veterinary profession.

The first case of Necrophorus at this camp made its appearance about May 15. It was a typical case of the most familiar form, Gangrenous Dermatitis, which affected the region of the

fetlock joint, and was easily diagnosed. At the time the first cases were noticed there were more animals at the depot than could be conveniently accommodated. The resulting accumulation of manure, aided by several weeks of warm, wet weather, formed a natural incubator for *B. necrophorus*. During a period of two months 20% of the animals at this depot became affected with some form of this disease. Not only the animals in the corrals were attacked, but mules from the pack train and horses used in guard duty, which were kept under most ideal conditions, were affected. This fact alone should be sufficient evidence that the *B. necrophorus* is a normal inhabitant of the soil.

Upon looking into the morphology of the *B. necrophorus* it is



Necrophorus infection of hoof starting as thrush, the infection penetrating to the deep flexor tendon and later to the outer lateral cartilage. Both the tendon and cartilage were removed, and the animal is recovering.

seen that it is essentially a pleomorphic organism, varying according to nutrition, soil, and age of culture, from coccoid forms to filaments over 100 microns in length and from 0.75 microns to 1.5 microns in width. The longer forms appear as slender, undulated, beaded filaments. Generally in the tissues these threads are matted together into an intricate network, like a mass of hair or even more compact felt. The same appearance may be found in colonies. Frequently the filamentous forms present one wide or clubbed extremity, with the other tapering. The older cultures, either animal tissues or artificial media, exhibit almost exclusively bacillary cocci.

Cultivation of *B. necrophorus* is not easy. It is an absolute anærobe. Agar agar stab culture seems to be most satisfactory. Near the close of the second day a few grayish-white colonies make their appearance at the bottom of the needle tract. These gradually increase from below upward to within 1-1.5 cm of the top of stab canal. Then is formed a thin, narrow, yellowish-opaque or grayish-white line of growth, surrounded by a thin, white cloud. On slight magnification this is seen to be composed of minute waving threads. In the study of fresh tissue smears taken from specimens sent to the laboratory from this camp invariably the bacillus was found by making a film on a slide with



Necrophorus infection in region of knee. Necrotic tissue has been removed.

a teased particle of the suspected tissue and staining with ordinary analine dyes. As the organism is anærobie, it was easily found in the deep structures of specimens thus obtained. At this laboratory the *B. necrophorus* was isolated in pure culture and the same organisms recovered from inoculated rabbits.

GENERAL PATHOLOGY.

This may be broadly stated as a coagulation necrosis, with subsequent caseation characterized by a most malignant tendency to involve the whole organism. This is manifested in three ways: by a progressive advance into the surrounding tissue, by an invasion of distant parts of the body by embolic metastasis, and finally by general metoxication. Dead tissue acts upon the surrounding healthy structures as a foreign body, causing both

mechanical and chemical irritation; in consequence of which an inflammatory reaction is uniformly established in the adjacent healthy tissue. At the periphery of the necrotic part there must be observed an inflammatory zone, marked by greater or less inflammatory hyperæmia. From the action of the fluid exudates penetrating the dead tissue, which liquefy small necrosed areas, there is often left a space or defect which is later filled by poliferation of the surrounding tissues, or by inflammatory scar formations. Large necrotic areas, or such as apparently cannot be softened, resist absorption. These may be circumscribed by the inflammation, encapsulated, completely separated from the rest of the body (circumscribed necrosis).

MODE OF INFECTION.

It may be stated with positiveness that *B. necrophorus* does not enter unimpaired tissue. Most, if not all, of its infections with which we are acquainted require for their inception a break in the continuity of the skin, for the skin necrosis; tread wounds, punctured wounds, suppurating corns, etc., for the hoof necrosis.

SYMPTOMS.

The affection takes a form of what is apparently an ordinary small wound. In spite of the ordinary antiseptics used, within twenty-four to forty-eight hours we notice a vast change. The infection is now of a malignant character, shows a tendency to spread and involve the deeper tissues. Sometimes the areas involved are from five to six inches in diameter. The necrotic lesions are characterized by the presence of a grayish-yellow, greasy, foul-smelling secretion. If proper treatment is not applied and the infection spreads to the deep tissues, involving joints, etc., we notice the general symptoms of inappetence, languor, weakness, rapid and feeble pulse, indicating a general intoxication. Emaciation is rapid, although not always fatal. This form usually renders the animal unserviceable.

Necrotic scratches, or dermatitis-gangrenosa, in the region of the heel commences as a mere erythema from exposure to the original causal influences. The affection takes on the eczematous character. In the abraded surface, coated with a greasy exudate by mixing with dirt, thus making an air-tight packing, *B. necrophorus* finds an attractive nidus, where it begins its necrotic process, which is always marked by a progressive character. In the process of this destructive inflammation, not only the skin is affected, but the subcutaneous tissue is involved. It quite often

penetrates into the tendon sheath of the flexor apparatus, causing its necrosis, and also penetrates the fetlock or pastern articulations. The necrosis may travel upward as far as the back, involving the subcutaneous structures in that region; or it may burrow downward into the hoof structure, attacking not only the soft parts of the hoof, but also the lateral cartilages and coffin bone.

NECROTIC QUITTOR.

In cartilaginous quittor we find the typical instance of necrobacillosis of cartilage. This may arise as a primary necrosis due to some direct injury, such as tread or heavy blow, which may puncture or crush the cartilage, the *B. necrophorus* gaining entrance at time of injury, or later, from contaminated particles of soil which gain entrance. This condition is first manifested by an inflammation of the tissues, which results in a hot, painful swelling of the coronet over the affected quarter, and marked lameness. Later we notice one or more openings in the swelling, which discharges a pale yellow fetid fluid, and which connects with the necrosing cartilage by means of fistulous tracts. The wall of the hoof below the diseased quarter, stimulated to overproduction by the inflammation present, becomes thick and irregular. When treatment is not applied the disease usually spreads to the ligaments, joints, or even the bones, sometimes involving the sensitive laminae, producing a general septic pododermatitis.

Necrosis of flexor perforans tendon, due to picked up nail, with *B. necrophorus* infection. Symptoms are synonymous with those of ordinary nail prick with the exception of a more rapid course. Very marked general symptoms are noticed, along with the usual lameness. If left to take the normal course, the infection penetrates upward into the flexor apparatus, which usually produces death. Severe forms of thrush with *B. necrophorus* infection produce very similar symptoms to those of nail prick, with the exception that in the early stages lameness is not well marked, but gradually increases. The entire horny frog may separate from the sensitive frog, having a very foul-smelling secretion. Dirt becomes mixed with this secretion, forming a filthy mass, an ideal place for *Necrophorus bacillosis*. The necrosis spreads into the sensitive frog, later into the deeper structures, involving the deep flexor tendon, pedal bone, and sometimes the pedal articulation.

TREATMENT.

B. necrophorus being an anærobe, each form must be treated with one object in view: expose the organism to the air. This is easily accomplished with the knife. In gangrenous dermatitis, remove all necrotic tissue and a part of the healthy structure, cutting away ragged edges of skin around necrosed area. After the necrotic tissue is removed, apply bichloride pack 1-500, leave pack 24 hours, remove, and apply the following: camphora pulv., liq. cresolis compositus and phenol, of each 3 ounces; tincture of iodine, q. s., 1 quart. Apply with swab twice daily. If part becomes filthy, wash before applying. Bandaging at this time is contraindicated.

The most satisfactory treatment for necrosis of lateral cartilages and perforans tendon is surgical, complete resection of lateral cartilage or tendon followed with the usual antiseptic dressing gives the best results. Caustics have been tried in early stages, but apparently it is impossible to penetrate to the seat of infection; consequently, the desired results are not obtained.

INTESTINAL COCCIDIOSIS.

W. J. LENTZ, University of Pennsylvania, School of
Veterinary Medicine.

Having read in the September issue of the JOURNAL of the A. V. M. A. the very interesting article by Dr. C. H. Schultz ("Some Mysterious Losses Among Cattle in the Pacific Northwest"), I herewith call attention to a case described by me in the report of the Committee on Medicine and Surgery submitted at the meeting of the Pennsylvania State Veterinary Medical Association, held in Harrisburg in January, 1918.

Was asked to consult with a veterinarian on an interesting condition in a herd of grade Holsteins. Owner had lost four or five heifers over a period of about two weeks, ranging in age from six months to eighteen months. All presented similar symptoms. There was first noticed a serous, fetid, black diarrhœa. Fever was rarely in evidence at any time. The diarrhœa after a few days changed to mucous, with the passage of blood clots with the mucous and feces from time to time. Straining was very marked. Appetite somewhat impaired but, nevertheless, partook of some food, but finally, in about six to eight days became very dull, refused food, emaciated rapidly, rectum became relaxed, tempera-

ture subnormal, pulse hardly perceptible, and these symptoms of collapse were soon followed by death. On arrival at the farm found six to eight calves and one adult cow presenting some of the symptoms mentioned, and inasmuch as one was about to die, it was destroyed and posted. Lesions were confined to the large intestine. No apparent pathological change in any other organ. The mucous membrane of the large intestine, which was almost empty, was red-brown in color, soft and spongy, and everywhere coated with bloody mucous. The back of the knife, after the intestine was slit open, was passed over the mucous surface and the bloody mucous scraped off, when it was noticed that large superficial ulcers, white in color, and about the size of one's palm, were present throughout the whole extent of the large intestine, from the cæcum to the anus. Some of the mucous patches were scraped off and collected in a bottle, also some of the blood and feces. On microscopic examination, *Coccidia* were detected. A diagnosis of "Intestinal Coccidiosis," or "Red Dysentery," was therefore made. Treatment suggested: Pearson's creolin well diluted with milk or water, also large doses of camphorated tincture of opium, and rectal injections, using garden hose and funnel, of a two per cent creolin solution, alternating night and morning with a one per cent. alum solution. A week later received word that all were doing nicely and no deaths.

Announcement has just come to hand of the marriage of Miss Joanna Marie Reagan to Dr. Thomas Emmet Smith, the ceremony having taken place at Saint Bridget's Church, Jersey City, New Jersey. The Journal takes this opportunity of wishing for the young couple all the happiness and prosperity they could desire throughout their wedded lives.

ABSTRACTS FROM RECENT LITERATURE.

ANAEROBES IN SOIL-INFECTED WOUNDS.

In the course of work for Sid David Bruce's Tetanus Committee, at the Bact. Lab., Dartford War Hospital, Mr. Henry Goodale, O.i/c., was able to collect evidence respecting anærobes from a large number of cases. From these he states the following conclusions:

1. That anærobes or their spores persist in the deep tissues around bone and in scars after wounds have healed, or when they are covered with healthy granulations that give nothing but staphylococci on culture.

2. The anærobes can find their way from an infected wound of the extremities to the serous cavities of the brain and pleura, and are found in these localities in connection with meningitis and pleurisy.

3. The anærobes are found in metastatic abscesses of the lung resembling in type the organisms found in the soil-infected wound of the patient, and the symptoms of these patients are those of general septicæmia.

I have not entered into any speculations as to the precise way by which anærobes find their way from one part of the body to another; it appears certain that they produce a substance that paralyzes the polymorphonuclear leucocytes and inhibits phagocytosis, this being one of the factors which accounts for the rapid progress of acute bacillary gangrene.—*The Lancet* (London).

SODIUM SULPHATE EXSICCAT.

Some of the veterinary profession are anxious for a substitute for linseed oil. This winter I have used, in many cases of colic, sod. sulph. exsic. with very good results and far more satisfaction than linseed oil: 6 ozs. (exsic.) dissolved in a quart bottle of warm water. This may not purge, but it renders the bowel contents easy to pass along. It agrees well with horses in these cases, is not nauseating, nor leaves the mouth in a dirty condition; in fact, it cleans it, and takes effect quickly. Two or three cases I

had where the pulse got up rapidly, and breathing was affected, as if hardened ingesta had accumulated about the flexures of the colon, with some irritation. The sod. sulph. moved this on nicely, and next day the animal was greatly improved or wholly better.

I always carry one or two packets with me, and consider it so very much superior to linseed oil in all respects that I would not now use the oil at all. One never sees that sickly, nauseating, paralyzing effect in bowel cases which one sees after administering oil. In every respect I like it better; and another merit it has which I, as a true Scotsman, must not omit to mention—that of cheapness.

In all the cases one dose answered the purpose, but another dose could be given next day. Of course, unlike whiskey, don't repeat in an hour; wait till next day.—W. Lothian, M.R.C.V.S., in *Veterinary Journal*, London.

A CASE OF HYDRARGIC ALOPECIA IN A HORSE.

C. Lerena records this case in the *Revue de la Société de Médecine Vétérinaire de Buenos Aires* for 1917. A black horse, in good condition and with no history of disease, presented a hyperplasia of the left hock, probably due to a traumatism. Lerena applied a friction of biniodide of mercury ointment, which was repeated seven days later. At the end of some time the horse lost his coat, remaining completely depilated. No symptoms of hydrargism were presented; and an examination of the urine for mercury gave a negative result. The latter fact is explained by the small quantity of mercury which could have been absorbed, and by the time which had elapsed since its application.

It is difficult to understand how the mercury could have caused the depilation, in view of the minute quantity of it absorbed by so small a surface. Lerena thinks that perhaps an anaphylactic "shock" was produced in the patient after the second application of the mercury.

Lerena believes that the diagnosis of hydrargic alopecia was confirmed by the fact that the horse grew a coat of hair without any treatment, and also because it was possible, by the examination of the skin and by the circumstance that the animal had been cohabiting with others, to absolutely exclude the possibility that the case might be one of ringworm.

Lerena also states that, when a student, he treated a young chestnut horse affected with arthritis with repeated frictions of strong mercurial ointment on the carpal and tarsal joints, and in this case also falling off of the hair took place. From these facts, he deduces the following conclusions: There are subjects in which, from an idiosyncrasy, a single mercurial friction suffices to produce Hydrargic alopecia.

A veterinary surgeon, in a case of equine alopecia, should regard as an important point in diagnosis an inquiry as to whether the horse has previously undergone a mercurial treatment.

EPILEPSY CAUSED BY PARASITIC CYSTS IN THE BRAIN OF A DOG.

Subject.—Samoyede dog, two years old.

History.—The animal had suffered periodically from epileptic fits, which made the owner suspect either "rabies or poison," as it had been dosed several times for worms, and had been declared by a graduate free from them. The dog was in the habit of carrying stones in its mouth, which the owner said he could not break it of unless it always wore a muzzle. The dog had recovered from distemper twelve months previously and had been attended by a V. S.

Symptoms.—I observed the animal moved in a happy-go-lucky, clumsy sort of fashion, and showed symptoms of "hemiplegia" on the right side. It had a fit in my surgery, and the usual paroxysms were manifest, accompanied by foaming at the mouth, etc.

Prognosis.—Unfavorable.

Diagnosis.—Perhaps epilepsy, due to reflex irritation caused by foreign body in the stomach, or worms or "cysts in the brain."

Treatment.—Gave hypo. inj. apomorphine as an emetic, which acted quickly, and a mass of debris, composed of bones and matted hair, was vomited. Gave internally bromide compound (elixir) (Parke, Davis & Co.) pot. bromid., chloral hydras. and ext. cannabis indica and ext. hyoseyamus, as a sedative and suitable diet of a liquid nature, which relieved the animal temporarily. Put the dog later on a diet of raw meat minced and tripe, and administered a tonic of hydrated iron 1 gr., and arsenic 1-30th gr. in food; sent little antileptic pills, tinc. valerianate 1 gr.; zinc. bromide $\frac{1}{4}$ gr., arsenic bromide $\frac{1}{4}$ gr., to be given periodically as a preventive of fits.

Remarks.—Dog discharged from infirmary, brought back as a result of a street accident (run over by motor, and severely injured), paralyzed. Advised destroyal, to which the owner consented. I made a postmortem, which was interesting.

Result.—No fracture anywhere present, but a “cyst” was found in the anterior lobe of the brain, and several others of small dimensions in the brain substance, and on its lower surface. These all had the characteristic appearance of the cysts of the “*tania cellulosa*” variety of man.—H. B. Eve, M.R.C.V.S., in *Veterinary Journal*, London.

RETENTION OF URINE AS A CAUSE OF COLIC IN YOUNG FOALS.

In my experience it is fairly common to have colic in foals from eight to twenty-four hours after birth, in which the bowels have been acting quite regularly, and the appetite has been normal, but where they have been carefully watched, the passing of urine has not been noticed.

At first the foal appears to be getting rather dull, it then begins to kick a little and walk round the box more than usual, stretches itself as though about to urinate, but does not.

After some time, it lies down, but not for long, rises again and assumes the position for micturition, without any result. It may suck a little milk, then wander round a little and lie down, but does not seem to be comfortable, and does not fall asleep.

When this has been repeated several times, symptoms of more acute pain develop, and there is persistent rolling on to the back or over the body from one side to the other, with some groaning. Every now and again there is an endeavor to micturate, which is ineffectual, until the pain becomes so extreme that constant groaning and rolling is evidenced. Occasionally at this time the foal will rise, and when up, it goes round the box at a smart pace, almost a trot, and frequently also kicks out with the hind legs.

In cases of some standing the belly looks fuller than it should be, and in extreme cases palpitation reveals the presence of liquid in the abdomen. The temperature is normal, but the pulse is very frequent and full, even hard, and the breathing is blowing in character.

It is most frequently seen in colt foals. I have only seen one case in a filly foal.

To me, it appears that it might be due to either of two causes, viz :

- (1) A weakness of the bladder wall, which makes it incapable of expelling the contents.
- (2) A gluing together of the walls of the urethra with mucus, which the contraction of the bladder is unable to overcome.

The case I had in the filly foal was undoubtedly due to weakness of the bladder, which disappeared in a few days, and gave no further trouble.

Treatment.—Small doses of spt. of Ether nit. are quite frequently given by the owner, before seeking advice, and quite often with happy results. The owner thinks it is due to the medicine stimulating the excretion of urine, which, according to his idea, is in abeyance. But, in my opinion, the extra quantity of urine excreted produces sufficient pressure in the bladder to overcome the obstruction in slight cases, and recovery follows. In cases where it fails the extra pressure produced only aggravates the case.

The quickest way to give relief is catheterisation. In filly foals this is not difficult to accomplish and in the case I had it was done thrice daily for three days before micturition was normally performed.

For colt foals I don't know that a cathether is manufactured, at least I ordered a foal's cathether several years ago and the one I got would do for a colt nine months old or so, but is hopeless for a new-born foal. However, the whalebone stillet sent with it appeared to be about the proper thickness, and quite flexible, and a trial was made to introduce it into the bladder. It proved to be easy to accomplish, and in every case in which it has been used micturition took place shortly afterwards, with immediate and permanent relief from the pain, no further treatment being required. Perhaps some instrument maker may take the hint and produce a proper instrument.—P. Wilson, M.R.C.V.S., in *Veterinary Journal*, London.

ARMY VETERINARY SERVICE.

Lieutenant Colonel D. S. White, now in France, has been appointed Chief Veterinarian of the American Expeditionary Forces.

Major Gerald E. Griffin has been promoted to the grade of Lieutenant Colonel. Colonel Griffin is the Senior Veterinary Instructor at the training school for the organization and training of veterinary hospital units, Camp Lee, Va.

First Lieutenants A. H. F. Harmening and Peter T. Pedersen have been promoted to the grade of Captain.

Second Lieutenants Paul L. Robinson, Robert J. Robertson, Fred. W. Shinn, Russell J. Flanagan and Raleigh M. Ward have been promoted to the grade of First Lieutenant.

The following officers have been assigned to camp duty as meat inspectors:

Second Lieutenant Paul S. Christman, V. C.—96th Div., Camp Wadsworth, S. C.

First Lieutenant Evard A. Dean, V. C.—Camp Dodge, Des Moines, Iowa.

Second Lieutenant Geo. B. Hartke, V. C.—95th Div., Camp Sherman, Ohio.

Second Lieutenant Walter J. Kiff, V. C.—Camp Sevier, S. C.

First Lieutenant Frank C. Meisner, V. C.—97th Div., Camp Cody, N. M.

Second Lieutenant M. H. Gandy, 56th Field Artillery, Camp Bowie, Tex., has been promoted to the grade of First Lieutenant.

Lieutenant Ashe Lockhart, Veterinary Corps, has been transferred from Camp Devens, Mass., to Camp Lee, Va.

Lieutenant C. J. Norden, Veterinary Corps, is reported to be seriously ill with pneumonia at Camp Mead, Md.

Second Lieutenant W. D. Odou has recently been promoted to First Lieutenant and is now located with Veterinary Replacement Unit No. 2 at Camp Lee, Va.

First Lieutenant A. H. Harmening has been promoted to Captain.

Lieutenant H. T. Ludwig of Oklahoma City has recently been transferred to Chicago, Ill., where he is on duty under Major Lytle.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.*

ADDRESS OF WELCOME.

HON. E. J. CATTELL, City Statistician of Philadelphia.

Mr. President, Members of the Convention, Ladies and Gentlemen:

I am very happy to be here, but after that flattering introduction I am afraid the "treat" is liable to go into retreat. This is a morning when all our ideas seem to go to the seashore and leave us at home. But one thought is dominant, and that is that you are distinctly welcome to this Old Mother City of the Republic.

You take in the whole American continent, and take in Canada, which gave me back my life. I was born in Philadelphia, but when I was broken in health a great Canadian physician gave me back my life.

I want to say in behalf of the 108th Chief Magistrate of Philadelphia, Mayor Smith, that you are welcome, and doubly welcome. Each visitor to Philadelphia will perhaps take away from Philadelphia a new realization of life, a realization that life is worth living. In a crisis like this the first thing for those not on the firing line is to get a new realization of the things called life. It will inspire us and put into our actions a new quality and power. Frankly, I grow more in love with life as I grow older. I want to live to a hundred, and then renew the lease with double the rent and repairing done by the tenant. It seems to me a great deal of repairing will be needed on the roof (referring to bald head). However, I have no fear, for I never see cheap furniture with a marble top. (Laughter.)

We should get the spirit that was put into a phrase spoken by a dear little chap in our Public Building a few years ago, who fell part way downstairs. When I picked him up he said, "I was going down, anyway." My philosophy of life is, "If I can't get what I like I like what I get." That is a good rule even for married people. (Laughter and applause.) If we will only

* 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

get over this habit of borrowing trouble. Carlyle once went to see a neighbor of his who had a pet rooster, and said, "You will have to get rid of that rooster." The lady said, "Poor Bo only crows three times each night, each crow only three seconds; what is nine seconds of crowing to a strong man like you?" Carlyle answered, "Madam, you don't know what I suffer waiting for the blamed thing to crow." (Laughter.)

It is this walking into tomorrow with legs only long enough for today that causes all the trouble. It is the ability to fill every moment of every splendid hour with actions of value to others—that is the secret of a long life. And life often is not measured by the number of years. These splendid fellows giving back to God the life that has been given them live centuries in that moment of sacrifice, and give a new value to every hour of life lived everywhere. These splendid boys are in my heart all the time, and every hour of every day I send a prayer to the Living God, "Take the dying to Thyself; give the wounded splendid recovery; bind up the broken-hearted, and bring our boys home with victory." (Applause.)

But we have got to do our part. America is divided into two classes: we have either got to live to serve or die to save. Each man and woman must say, each American, "The world does not owe me a living, but I owe a life."

I am glad to see so many of the ladies here. The Lord made man first, and woman after; but man has been after woman ever since; and whenever there has been any real development you will find woman at the basis of it. I have a sign in my office which reads, "If a pretty girl passes and I don't notice her, send for the coroner; I am dead." (Applause and laughter.) We have got to depend on them and we have got to depend on ourselves, and get down to a hard basis. It is all very well to rhapsodize on how much we love Old Glory, and how much we owe to the Constitution, the Declaration of Independence, and Magna Charta—we must hitch our wagon to a star, but have long traces, so as to keep things moving.

I was in a magistrate's court, and one of the prisoners was a Salvation Army captain. The magistrate asked, "What is your name?" The prisoner answered, "Simmons." Question: "Where do you live?" Answer: "Heaven is my home." The magistrate: "Thirty shillings fine. That is the disadvantage of living in the suburbs." (Laughter.) There are so many people who live in the suburbs and not in the heart of life,

rhapsodizing about the joy of living and not doing anything for anybody. Each one has an opportunity every hour to get right down to doing things. We are in a fight now to the finish, double or quits. I am of the opinion we are going to win out hands down, and much quicker than people think. (Applause.)

I remember a young fellow who was a bad boy but had a good father, a Baptist preacher. The bad boy thought his father had gone away. His father came home suddenly while the boy was home playing cards. He had a good hand, but was at a loss where to put it when his father so suddenly returned. He ran and put it into his father's gown that hung in a closet nearby. The next day his father had an immersion. Both banks of the stream were lined with people. When he was ready to read the service he put his hand into his gown, but instead of bringing out a prayer book he brought out the ace of hearts, the king of hearts, the queen of hearts, the jack of hearts, and the ten. The father grabbed the boy and said, "Can't you help your father?" The boy said, "You don't need any help with a hand like that." (Laughter.) We don't need any help with a hand like ours. We are on the side of the great moralities. I told a young friend of mine, "Boy, I don't want you to die for your country; make the other fellow die for his, and you come home."

Let us save our energy. Don't waste it in quarreling; it is so easy to get cause for offense. I remember going out one morning, and our coachman looked so down-hearted I asked him what the matter was. He said, "My wife is going to die." I said, "What is the matter?" He said, "I don't know, but the doctor says so, and he knows what he is giving her." (Laughter.) An Irishman was dying in the hospital of smallpox. They said, "Shall we send for a priest?" He said, "No, send for a rabbi." They asked him, "Why, aren't you a Catholic?" He said, "Yes, but I don't want to give my priest the smallpox." (Laughter.) A dear old couple in Philadelphia, who had never driven a horse, went to Delaware on their twentieth anniversary. At Wilmington they hired a team, and while driving a shower came up. The old man took his wife's umbrella and put it over the horse. His wife said to him, "Why don't you put it over me; I am getting all wet." The old man said, "The livery man told me this horse was all right if I kept the rein from under his tail." (Laughter.) It is misunderstanding that causes so much trouble. I had a friend who had a war garden and said he was going to plant a

lot of corn. I met him later and said, "Did you put any corn in?" He said, "No, the guide book said that corn is raised in hills, and our garden is flat." (Laughter.) There is always a task for our hands if we have the heart for the work.

Philadelphia, the Mother City of this great republic, is very happy to welcome you. At this particular time we feel a particular pride in our boys, because Pennsylvanians have been receiving a baptism of fire in the last couple of weeks. In this very hotel, only a few yards from where I am standing, a boy met his father only a few weeks ago, and slipped his arm over his father's shoulder and gave him a hug like a boy coming home from school. Three weeks ago that boy, leading his troops, fell, facing the foe. The father is heart-broken. He had a telegram from the other boy, his only son left living, now on the way over, saying he was grieved the boy had to go, but if he had to go that is the way he would have him go.

That is the Spirit of America, of splendid Canada, of all the Allies; and that spirit renders man invincible, practically invulnerable as regards the soul.

You are happy, we are happy—we are all happy—in having you meet here today to exchange views. Emerson says, "These are days in which if any man has a helpful heart he owes it to his neighbor; and if he has a burden he owes it to his neighbor and himself to carry it to the Living God, the Great Burden-Bearer, and not take it to others and add to their sorrow." A dear girl friend of mine was grieving over the death of her little baby, breaking her husband's heart. I went over to tell her not to grieve. I was waiting at the door of the little bungalow, and knocked at the door, and while waiting I didn't know what to say to her; but when I saw her face I saw she had learned the lesson herself. I said, "Jennie, you must not grieve over Ethel as you do. It won't help." She said, "Yes, I know that now. Yesterday when I was cleaning up Ethel's playroom I saw her little shoes, empty; and I must have fallen asleep, for I heard the singing of little children and I ran to the window and saw a line of little angels, each carrying a torch and singing. At the end of the line I saw my little girl, and her torch was out, and her face was in shadow. I said, 'Why is your torch not burning?' She said, 'Mamma, your tears have put it out.' " In these days of crisis let one of these splendid results from all the blood and tears be a stronger self-reliance, and reliance on Him who holds in the hollow of His hand the destinies of the world.

You are welcome to this city of nine hundred churches, and three hundred and seventy-six thousand homes; and from those churches and homes there are prayers lifting every hour of the day that out of this period of trial will come a better time, a time of understanding between man and man, and between nation and nation, an understanding that man does not live to himself alone.

May God bless you in your deliberations, and when you go from Philadelphia may you carry a new realization of the value of life, and a new joy in life and belief that out of this great war shall come to remain "A government of the people, by the people and for the people," and it shall be insured for all the liberty-loving people of the world. (Applause.)

President Moore has appointed the following committees of the A. V. M. A.:

INTELLIGENCE AND EDUCATION.

Geo. W. Dunphy, Chairman (2 years), E. Lansing, Mich.

J. A. Kiernan (3 years), Bureau of Animal Industry, Washington, D. C.

Cassius Way (4 years), 781 Ocean Ave., Brooklyn, N. Y.

Geo. H. Hart (1 year), Univ. of Calif., Berkeley, Cal.

H. D. Bergman (5 years), 711 Hodge Ave., Ames, Ia.

LEGISLATION.

W. Horace Hoskins, Chairman (3 years), 338 E. 26th St., New York, N. Y.

J. P. Turner (2 years), 916 O St., Washington, D. C.

S. J. Walkley (1 year), 185 Northwestern Ave., Milwaukee, Wis.

C. B. Palmer (5 years), Easton, Pa.

F. A. Bolser (4 years), 1200 Race St., Newcastle, Ind.

BUDGET.

(Ex-Officio Membership.)

V. A. Moore, President, Ithaca, N. Y.

M. Jacob, Treasurer, 312 W. Church St., Knoxville, Tenn.

N. S. Mayo, Secretary, 4753 Ravenswood Ave., Chicago, Ill.

John R. Mohler, Chairman Executive Board, Washington, D. C.

SALMON MEMORIAL FUND.

J. F. Winchester, Chairman, Lawrence, Mass.

W. Horace Hoskins, Secretary-Treasurer, 338 E. 26th St.,
New York, N. Y.

J. S. Anderson, Seward, Nebr.

S. Brenton, 121 W. Alexandrine Ave., Detroit, Mich.

David F. Fox, 1215 15th St., Sacramento, Cal.

J. G. Rutherford, Canadian Pacific Ry., Calgary, Alta.

SECRETARY'S OFFICE.

A slight change has been made in handling funds of the Association. All funds received by the Secretary are placed in a Chicago bank at once and these funds are sent to the Treasurer every month. This is a more convenient plan for all concerned. Sometimes a check is returned unpaid and the Secretary is able to take the matter up without delay. This method also furnishes an additional check on the funds and simplifies the work of the Treasurer.

If you have not paid your 1918 dues, please send in your remittance promptly and get your 1918 membership card. This will assist us very much.

Members of the Association should not send their subscriptions to the Editor of the Journal, as the \$5.00 annual dues are divided, half going to the Journal fund, but this is paid through the Treasurer.

The Secretary wishes to suggest to the Canadian members the importance of inducing the Canadian postoffice department to adopt a modern style of money-order. The one now issued is about as inconvenient as could be devised. We feel like going out behind the barn and making a few remarks every time one is received. Don't let this little kick deter you from sending in your dues.

A number of complaints from members who have not received their Journal come to this office and the Editor doubtless receives many more. Remember that second-class mail is not forwarded, so when you change your address notify the Editor promptly.

Send the Editor news notes about yourself or others, and help him make *our* Journal the best veterinary journal in the world—and don't forget to boost for the Association. Have you got a new member lined up for this year? Send in his application at once.

"Everybody get busy."

As a result of the postal-card nominations the following are the candidates for members of the Executive Board of the A. V. M. A. for Districts No. 2 and No. 3 (the names are given alphabetically):

District No. 2—W. H. Hoskins, L. H. Howard, C. J. Marshall, T. E. Munce, and C. Way.

District No. 3—A. H. Baker, S. E. Bennett, S. Brenton, D. M. Campbell, and A. McKercher.

A rather peculiar incident in connection with the nomination in District No. 3 was that a veterinarian not a member of the Association received enough nominating votes to put him on the list had he been a member.

The postal-card votes on the nominations have been mailed.

N. S. M.

SECRETARY'S ANNUAL REPORT.

The last fiscal year of the American Veterinary Medical Association may be considered as an unusual one, as it marks the ending of the first year after the adoption of the new constitution, also the ending of the first full year of the Association's publishing of its own official journal. This new departure was closely watched by all members of the organization, especially so by those who entertained some skepticism regarding the wisdom of such an enterprise from a financial point of view. Last year's records seemed sufficient to allay all anxiety along this line, as the report of the treasurer shows that the combined bank balance for the journal and Association was \$3,142.87. The secretary's report shows much of the detail which was put into operation not only to bring the office of the Editor and Secretary into a close and harmonious working relation, but also in carrying out the requirements of the new constitution.

This year marks an epoch in our history, as it shows conclusively the strength of our organization during the crisis through which our country is passing at the present time. In this connection, I may call your attention to the importance of having an organization such as the A. V. M. A. When war was declared by this country a year ago last April, and the call went out for the services of qualified men of all of the various professions, for assistance in this world struggle, we were not found wanting. Without the existence of our present organization it would not have been possible last year at Kansas City to have sent to the

Honorable President of the United States such a telegram as was sent by our President and Secretary: "The American Veterinary Medical Association, in convention assembled, places its three thousand members at your command, to give and to serve as a body as you direct."

Not only did we pledge our support, but the call went out from the A. V. M. A. to the veterinarians, and a splendid response, of which we are all justly proud, was the result, as is shown by the large number in the Veterinary Reserve Corps, and the large number on the waiting list.

It is impossible for me to indicate on paper the valuable services that are being rendered by members of the veterinary profession both in this country and overseas; but, suffice it to say, we are standing side by side with the other professions in doing our bit to throttle the Kaiser, curb autocracy and make this world a fit place for civilized people to live in.

The further importance of our organization is attested to by the fact that at the present time 1,812 members of our profession are engaged in various war activities, many of whom are doing so at great financial sacrifice. I dare say that we would scarcely have a corporal's guard at this meeting if there was need for the rest of us in active service, and as long as this country would need our services, we would continue to offer them until all the members of our organization had volunteered.

The last has also been a record year from the standpoint of increasing our forces, as is shown by the fact that we have received during the last fiscal year a greater number of applications for membership in the Association than has been received in any one year since the Association was founded. This speaks well for the splendid seed which has been sown in previous years.

The veterinarians employed in the Bureau of Animal Industry early in the year began to lay plans, which are nearly completed at this time, to form an organization among themselves, the objects of such organization being the promotion of professional efficiency and the material interest of the Bureau veterinarians. The underlying principle of the plans of this movement is to interest all of the veterinarians of the Bureau of Animal Industry to become members of the A. V. M. A. This movement has been conducive of splendid results, as is shown by the large number of applicants received from the B. A. I. force. In several of the large official stations all of the veterinary in-

spectors who were not members of the A. V. M. A. have made application this year.

Early in the Spring, the Secretary's office sent a circular letter to the commanding officers of the various cantonments and remount stations, urging them to interest all of the non-members of the A. V. M. A. to join this body. These letters brought very satisfactory results, which are evidenced by the large number of applicants received from this source. And I am proud to say that several of the commanding officers reported that all of the non-members in their command had filed applications. Your Acting Secretary does not wish to take full credit for this work, but feels that much of the credit should be given those commanders in the National Army, and those in the Bureau of Animal Industry, who, by their unceasing effort, succeeded in interesting those about them to take this very important step. Credit should also be given your Secretary and former President for valuable suggestions received along these lines.

Much valuable work could be done by sending a representative of this Association to the meetings of State or District Associations, to assist in discussing papers or clinics, or even to take a more active part on the program, and at the same time explain the advantages to be derived by joining the A. V. M. A. The stimulus of such assistance would be of untold benefit, and as a result many would file applications for membership who would not do so otherwise; and oftentimes such individuals become the most enthusiastic members.

On January 1, 1918, we had slightly over 1,700 who were in arrears with their dues. This included those in arrears for 1916 and 1917. April 1, there were about 700 in arrears. Now this number has been reduced to 422, with 128 of this number 1916 delinquents and 316 1917 delinquents. Of the 1917 delinquents, I feel that at least 50% will pay their dues, and a few of the 1916 will pay. I find that a number of members like to let their dues run for a couple of years before paying. This is a bad practice, as it not only causes a great amount of unnecessary work both for the Editor and Secretary, but is also liable to cause a break in the files of their journal, which the Editor may be unable to repair. The postoffice authorities are very strict in enforcing the postal regulations forbidding the sending through the mails newspapers and journals the subscription charges for which are not paid in advance. Since a part of the dues to the A. V. M. A. pays the subscription to the journal, it places the

Editor in an embarrassing position. He wishes to continue the journal so as not to cause a break in the files of the member, but is prevented from doing so by the postoffice authorities.

On December 5, 1917, there was a meeting of the Executive Board. Those present were: Dr. John R. Mohler, Chairman and Member of the Third District; Dr. C. H. Stange, Member of the Fourth District; Dr. F. Torrance, Member of the First District (his successor had not been elected); and Dr. A. T. Kinsley, Member at Large. Dr. W. Horace Hoskins, Member of the Second District, and Dr. R. A. Archibald, Member of the Fifth District, were unable to attend. The meeting was held at the Sherman Hotel, Chicago, Illinois. The first order of business was the adoption of the minutes of the Kansas City meeting. The wish of Secretary, Major L. A. Merillat, that Dr. L. Enos Day act as Acting Secretary during the remaining portion of his term of office was discussed and accepted. It was also decided that in order to meet the demands of the Secretary's office, the Acting Secretary be empowered to engage a competent stenographer when required for extra work, such expense not to exceed \$300.00 until further approval by the Executive Board.

MEMBERSHIP.

This year marks the banner year of the Association in the number of applications for membership in this organization. More applications have been received this year than in any one year since the founding of the Association. Last year there were 553 applications received, and this was the largest number received in one year up to that time. This year we have received 1,028 applications, which is 475 more than last year; the excess alone over last year being about the usual number received in former years.

Our membership now stands as follows:

Members in good standing.....	2,386
Members in arrears for 1917.....	316
Applicants in 1918.....	800

Total.....	3,492
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The sources of the applications are as follows:

Army Reserve Corps.....	275
Bureau of Animal Industry.....	328
From all other sources.....	198

Total.....	801
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It is our opinion that the large influx of applications this year is largely due to the organized efforts above mentioned. I would suggest that each member should make a solemn vow to act as a committee of one for the purpose of securing at least one new member before the next meeting. If this will be done, the results will be astounding.

On looking over this excellent list of applicants, I am somewhat surprised to see the names of quite a number who graduated many years ago; several of them being classmates of mine. I at once asked myself the question, Why have these men not become members before? The probable solution is that the objects of the A. V. M. A. have not been previously explained to them, or possibly they have never received an invitation to join. Let us never let a chance go by to extend the inviting hand to a worthy veterinarian.

L. ENOS DAY, Acting Secretary.

REPORT OF TREASURER.

RECEIPTS.

(August 7, 1917, to August 8, 1918)

1917		
August	8, To balance	\$2,268.35
August	13, Deposit from Dr. L. A. Merillat.....	918.50
September	4, Deposit from Dr. L. A. Merillat.....	394.50
September	4, Deposit	198.00
September	4, Deposit	158.55
September	4, Deposit	854.50
September	4, Deposit	176.50
September	13, Deposit	206.00
September	22, Deposit	129.00
October	11, Deposit	249.75
November	19, Deposit	318.00
November	19, Interest on deposit.....	32.76
1918		
February	4, Deposit	293.50
March	7, Deposit	790.75
March	26, Deposit	310.00
April	23, Ralph D. Sonet's check for dues and protest.....	16.50
April	23, Dr. L. L. Shorten, Concordia, Kansas.....	10.00
April	23, Deposit from Dr. L. E. Day.....	192.00
May	20, Deposit from Dr. L. E. Day.....	296.00
June	5, Deposit from Dr. L. E. Day.....	109.00
June	15, Deposit	122.65
May	1, Interest from bank.....	43.74
July	1, Deposit from Dr. L. E. Day.....	347.50
July	15, Deposit from Dr. L. E. Day.....	407.65
July	25, Deposit from Dr. L. E. Day.....	507.75
August	8, Deposit from Dr. L. E. Day.....	1,002.65
Receipts		\$10,354.10
Expenditures		5,416.95
Bank book balance, August 8, 1918.....		\$4,937.15

EXPENDITURES.

August	8,	To balance	\$2,268.35
August	7,	Dr. L. A. Merillat, salary and expenses as Secretary, July	271.65
August	7,	Stickney & Montague, addressograph and equipment.	135.26
August	24,	Geo. H. Roberts, payment account of stenographic work	300.00
September	6,	Dr. W. Horace Hoskins, expenses as Chairman of the Legislative Committee.....	74.10
September	6,	Expenses of Secretary of Salmon Memorial Com- mittee	43.33
September	8,	Modern Press, printing for Secretary's office.....	71.25
September	8,	Dr. C. J. Marshall, expense incurred as Chairman of Army Service.....	137.80
September	8,	Dr. W. M. Burson, expense of Secretary for Georgia.	2.00
September	8,	Dr. S. J. Walkley, expense incurred promoting pass- age of Lobeck Bill.....	39.44
September	6,	Dr. Charles E. Cotton, expense incurred as Presi- dent of Association attending conference with Army Service Committee of Washington.....	89.70
September	6,	Dr. D. S. White, expense incurred as a member of Army Service Committee.....	37.38
September	6,	Magnus, Flaws & Co., balance for printing.....	31.50
September	6,	American Multigraph Co., installment on Multigraph	14.87
September	14,	Sun Printing Co., printing Treasurer's Report.....	47.50
September	14,	Dr. L. A. Merillat, expense Secretary's office for August and expense incurred 54th Annual Meet- ing	408.60
September	14,	Dr. V. A. Moore, expense as member of Army Ser- vice Committee, payment approved.....	95.66
September	14,	George H. Roberts, balance due reporting 54th An- nual Meeting	205.00
September	14,	Thos. H. Ferguson, expense as Chairman of Section on General Practice.....	10.05
September	14,	J. H. Blattenberg, expense incurred as Secretary of Section on General Practice.....	24.15
September	14,	Martin Printing Co., printing programs of 54th An- nual Meeting	30.00
September	14,	Dr. F. B. Jones, check from Chicago marked "Ac- count Closed." Check mailed to Dr. L. A. Merillat	10.00
September	14,	E. C. Dildine, check from Chicago returned unpaid. Check mailed to Dr. L. A. Merillat.....	5.00
September	20,	American Multigraph Co., installment on Multigraph	14.87
September	20,	J. G. Wills, expense incurred as Chairman of Sec- tion on Sanitary Service.....	7.23
September	20,	Dr. F. H. Schneider— Expressing reports	\$3.60
		Auditing books, H. E. Hosbach.....	25.00
		One-half office expenses for July and August..	41.26
			69.86
September	20,	C. L. Nelson, Winfield, Kansas, returned unpaid.....	5.00
September	20,	A. M. Taylor, St. Paul, Minn., returned unpaid.....	5.00
September	20,	L. F. Workman, Chatom, Ala., payment stopped....	10.00
October	26,	Dr. L. A. Merillat, salary and expense for September	147.30
October	26,	The Modern Press, printing.....	58.00
October	26,	Stickney & Montague, exchange of Addressograph in- voice and credit attached.....	95.00
October	26,	American Multigraph Co., 10th installment.....	14.79
October	26,	Julian Grayson, services as expert accountant necessi- tated to validate bond for current year.....	15.00
October	26,	John W. Spence, expense of Committee on Army Ser- vice incurred by Chairman C. J. Marshall.....	26.85

October	26, Johnson & Prince, expense of Committee on Army Service incurred by Chairman C. J. Marshall....	8.95
October	26, Marshall & Jackson Co., printing supplies, invoices and statements.....	33.50
October	26, W. W. Harless & Co., renewal of Secretary's bond....	17.50
October	26, W. Horace Hoskins, expense of Salmon Memorial Committee	50.00
October	26, B. Slade, legal services employed in effecting corporation of Association.....	25.00
November	6, John P. Simons, order to J. B. Johnson check on West Englewood Ashland State Bank, Chicago, Ill., and protest	\$25.00
	Expense	3.12
		<hr/> 28.12
December	1, Dr. S. J. Walkley, expenses in connection with Legislative Committee.....	11.91
December	1, Dr. F. Torrance, stationery for use in President's office	22.75
December	1, The Modern Press, printing letters.....	3.00
December	1, Dr. W. Horace Hoskins, expenses incurred while engaged in Legislative Committee.....	58.79
December	1, Dr. S. J. Walkley, expenses incurred in connection with C. legislation.....	9.52
December	1, Dr. L. Enos Day, October salary and expenses of Secretary's office.....	116.25
December	1, Magnus Flaws Co., printing.....	6.50
December	1, Dr. W. W. Webb, expenses incurred as Resident Secretary of Alabama.....	10.00
December	10, Dr. L. Enos Day, November expenses in connection with office Secretary.....	140.40
December	20, Dr. Mark White, refund on initiation fee.....	2.00
December	20, Record Printing Co., printing for A. V. M. A. during meeting of 1916, Detroit, Mich.....	52.00
1918		
January	15, Dr. U. G. Houck, spray of roses in memory of Dr. A. D. Melvin.....	10.00
January	30, American Multigraph Sales Co., installments 11 and 12 on Multigraph bill, dated January 4, 1918.....	29.30
January	30, Dr. L. Enos Day, December expenses in connection with office of Secretary.....	181.27
January	30, Dr. S. J. Walkley, expense in connection with Legislative Committee	17.37
January	30, Modern Press Co., 1500 envelopes for Secretary's office	4.00
January	30, Dr. W. Horace Hoskins, expense for November and December, member of Committee on Legislation..	87.72
January	30, Dr. S. J. Walkley, expense as member of Legislative Committee from December 1 to December 31, 1917, inclusive	8.75
February	19, E. C. Shumate, premium on Treasurer's bond.....	25.00
February	19, Dr. Enos L. Day, Secretary's salary for January....	121.25
February	19, Stickney & Montague, stationery and office supplies	90.54
February	15, Check returned, Concordia, Kan.....	10.00
February	11, Check returned, Atlanta, Ga.....	16.50
March	15, Dr. Enos L. Day, February expense, Secretary's office	166.30
March	15, A. Newell, floral wreath ordered by Dr. A. F. Kinsley for Dr. S. Steward's funeral.....	10.00
March	25, Modern Press, stationery and office supplies for Secretary's office.....	68.75
March	25, Dr. S. J. Walkley, expense as member of Committee on Legislation.....	11.08
March	25, Dr. F. H. Schneider, expenses in connection with office of Treasurer	124.48

April	5, Dr. R. C. Moore, expense attending meeting of Committee on Intelligence and Education, Chicago, March 5 and 6, 1918.....	35.20
April	5, Modern Press, envelope post cards, blank sheets, letterheads, postage and 5,000 envelopes for March 1, 1918.....	78.19
April	5, L. W. Gross, Manhattan, Kansas, for stamps while acting as State Secretary for the year 1917.....	7.64
April	11, Geo. W. Dunphy, expenses incurred acting as Chairman, Committee on Intelligence and Education, during month of March.....	94.73
April	11, Dr. L. Enos Day, expenses of Secretary's office for month of March, 1918.....	150.93
May	7, Modern Press, stationery.....	39.50
May	7, Modern Press, printing of election cards.....	6.00
May	9, M. M. Rothschild, 70 circular letters.....	2.00
May	9, Dr. W. Horace Hoskins, expense incurred acting as Chairman of Committee on Legislation.....	61.53
May	21, Dr. L. E. Day, salary and expense for April.....	126.00
May	20, Dr. S. J. Walkley, expense as member of Committee on Legislation for March and April, 1918.....	4.95
June	7, Dr. L. E. Day, expense and salary of Secretary's office for May.....	116.50
June	7, Modern Press Co., printing cards and application blanks.....	30.25
June	18, Dr. V. A. Moore, expense as member of Military Committee for March.....	28.66
June	18, F. H. Schneider, expense for March, April and May..	60.00
March	14, Check returned, Leaminster, Mass.....	5.00
March	22, Check returned, Clayton, Miss.....	10.00
April	2, Check returned, Birmingham, Ala.....	5.00
May	1, Check returned, Defiance, I.....	5.00
May	2, Check returned, Gallion, I.....	5.00
May	3, Check returned, Chillicothe, I.....	5.00
June	6, Check returned, Berkeley, Cal.....	5.00
June	25, Check returned, Straslung, Va.....	10.00
July	5, American Journal of Veterinary Medicine.....	21.00
July	5, World Press, printing 1000 letterheads.....	7.50
July	5, Dr. Geo. W. Dunphy, expense trip to Toronto for inspection of college.....	22.51
July	18, Dr. L. E. Day, expense and salary for Secretary's office for June.....	202.76
July	18, W. Horace Hoskins, expense as member of Committee on Legislation.....	106.16
July	18, W. Horace Hoskins, expense incurred as Chairman of Salmon Memorial Committee.....	12.97
July	12, Canadian collection, June 6-June 17, Canada.....	.22
July	25, Check returned, Mt. Vernon, Iowa.....	10.00
August	5, Check returned, New Iberia, La.....	10.00
August	3, Canadian collection, July 5.....	.11

\$5,416.95**JOURNAL FUND.****RECEIPTS.**

1917		
August	8, Balance	\$1,774.52
August	13, Deposit from L. A. Merillat.....	918.50
September	4, Deposit from L. A. Merillat.....	394.50
September	4, Deposit from L. A. Merillat.....	198.00
September	4, Deposit from L. A. Merillat.....	158.55
September	4, Deposit from L. A. Merillat.....	854.50
September	4, Deposit from L. A. Merillat.....	176.50

September 8,	Deposit from P. A. Fish.....	290.76
September 13,	Deposit from L. A. Merillat.....	206.00
September 22,	Deposit from L. A. Merillat.....	129.00
October 6,	Deposit from P. A. Fish, receipts from Journal.....	469.48
October 11,	Deposit from L. A. Merillat.....	249.50
November 5,	Deposit from P. A. Fish.....	414.98
November 19,	Deposit from Dr. Day.....	318.00
November 1,	Interest from bank.....	27.88
December 31,	Deposit	368.06

1918

January 18,	Deposit.....	637.84
February 4,	Deposit.....	293.50
February 15,	Deposit.....	582.85
March 7,	Deposit.....	425.14
March 7,	Deposit.....	790.50
March 26,	Deposit.....	310.00
April 6,	Deposit.....	688.28
April 23,	Deposit.....	192.00
May 6,	Deposit.....	533.59
May 20,	Deposit.....	296.00
June 5,	Deposit.....	109.00
June 8,	Deposit.....	485.91
June 15,	Deposit.....	122.50
May 1,	Interest from bank.....	45.52
July 1,	Deposit.....	347.50
July 6,	Deposit.....	298.71
July 15,	Deposit.....	407.50
July 25,	Deposit.....	507.00
August 5,	Deposit.....	391.76
August 8,	Deposit.....	1,002.50

Receipts	\$15,417.33
Expenditures	11,058.23

Balance..... \$4,359.10

Add checks not cashed:

No. 84, Fish.....	\$125.00
No. 85, Fish.....	60.00
No. 87, Norton.....	568.53
	<u>753.53</u>

Bank book balance August 8, 1918..... \$5,112.63

EXPENDITURES.

1917

August 8,	A. P. Fish, salary as assistant to Editor.....	\$50.00
August 8,	Dr. P. A. Fish, salary as Editor.....	125.00
August 8,	F. H. Schneider, expense in connection with office of Treasurer.....	20.83
August 15,	Norton Printing Co., printing August Journal.....	590.18
September 6,	Dr. P. A. Fish, salary for August.....	125.00
September 6,	A. P. Fish, assistant in Editor's office for August....	60.00
September 6,	Charles A. Bower, examination of books of Editor's office	10.00
September 6,	F. H. Schneider, one-half office expense for August..	20.83
September 20,	Norton Printing Co., 3500 copies September Journal, reprints, bills and envelopes.....	617.90
October 6,	Dr. P. A. Fish, salary as Editor for September.....	125.00
October 6,	A. P. Fish, salary as assistant to Editor, September..	60.00
October 6,	F. H. Schneider, one-half office expense, September..	20.83
October 11,	Norton Printing Co., printing October number of Journal, inserting, envelopes and miscellaneous printing	603.15

November	3,	Addressograph Co., addressograph, addresses and cabinets	227.35
November	5,	Dr. P. A. Fish, salary for October	125.00
November	5,	A. P. Fish, salary for October	60.00
November	5,	F. H. Schneider, one-half office expense for October . .	20.83
December	1,	Norton Printing Co., printing November Journal, reprints and mailing	476.81
December	3,	A. P. Fish, clerical assistance in Editor's office	60.00
December	3,	Dr. P. A. Fish, salary as Editor of Journal	125.00
December	3,	F. H. Schneider, one-half office expense for November	20.83
December	20,	Ithaca Realty Co., Bond No. 78309 for Editor	7.50
December	20,	Norton Printing Co., December Journal, inserting for mail, 1000 envelopes	660.49
1918			
January	8,	F. H. Schneider, one-half expenses of office for December	20.83
January	8,	P. A. Fish, December salary as Editor	125.00
January	8,	A. P. Fish, clerical assistance in Editor's office . . .	60.00
January	15,	Jr. of Am. Vety. Med. Assn., payment of petty cash	358.24
January	30,	Norton Printing Co., January, 1918, Journal and sundries	444.98
February	9,	F. H. Schneider, one-half expense Treasurer's office . .	20.83
February	13,	Dr. P. A. Fish, January salary	125.00
February	13,	A. P. Fish, clerical assistance, January	60.00
February	13,	Norton Printing Co., 3600 copies, extra edition and mailing	546.33
March	2,	Norton Printing Co., February Journal	592.91
March	8,	P. A. Fish, February salary	125.00
March	8,	A. P. Fish, clerical assistance, February	60.00
March	8,	F. H. Schneider, one-half expenses Treasurer's office	20.83
March	23,	Norton Printing Co., March Journal	518.24
April	5,	P. A. Fish, March salary	125.00
April	5,	A. P. Fish, clerical assistance, March	60.00
April	5,	F. H. Schneider, one half expense Treasurer's office .	20.83
April	22,	Norton Printing Co., printing April Journal	567.74
May	7,	P. A. Fish, salary for April	125.00
May	6,	A. P. Fish, salary for April as assistant to Editor . . .	60.00
May	6,	Dr. F. H. Schneider, one-half office expenses, April . .	20.83
May	14,	Norton Printing Co., printing May Journal	587.24
June	3,	Dr. P. A. Fish, salary for May	125.00
June	3,	A. P. Fish, salary for May	60.00
June	3,	Dr. F. H. Schneider, one-half office expense for May . .	20.83
June	7,	Dr. P. A. Fish, petty cash fund	443.89
June	18,	Norton Printing Co., printing June Journal	570.96
July	5,	Dr. F. H. Schneider, one-half office expense for June .	20.83
July	5,	Dr. P. A. Fish, salary for June	125.00
July	5,	A. P. Fish, salary for June	60.00
August	1,	Dr. P. A. Fish, salary for July	125.00
August	1,	A. P. Fish, salary for July	60.00
August	1,	F. H. Schneider, one-half office expense for July . . .	20.83
August	1,	Norton Printing Co., printing for July Journal	568.53

\$11,058.23

FREDERICK H. SCHNEIDER, Treasurer. RELIEF FUND.

RECEIPTS.

(From Dr. T. E. Smith)

1917

August	31,	Deposit	\$82.00
October	6,	Deposit	25.00
October	18,	Deposit	685.00
November	3,	Deposit	50.00

November 24,	Deposit.....	266.00
December 10,	Deposit.....	185.00
December 31,	Deposit.....	50.00
1918		
January 3,	Deposit.....	243.00
January 30,	Deposit.....	398.00
March 7,	Deposit.....	101.00
February 9,	Deposit.....	460.00
March 15,	Deposit.....	50.00
March 21,	Deposit.....	228.00
April 6,	Deposit.....	175.00
April 23,	Deposit.....	236.20
May 20,	Deposit.....	447.00
June 19,	Deposit.....	382.50
May 1,	Interest.....	33.49
July 1,	Deposit.....	105.00
August 5,	Deposit.....	285.00
		<hr/> \$4,987.69

EXPENDITURES.

1917		
December 10,	Printing, J. H. Blattenberg.....	\$12.10
1918		
April 7,	Canadian collection	2.65
		<hr/> 14.75
	Balance bank book August 8, 1918.....	\$4,972.94
Dr. F. H. Schneider, Treasurer, York Road and Erie Ave., Philadelphia, Pa.		

Dear Sir: We enclose herewith pass books and canceled checks, with a statement of the balances as of this date, in the following accounts:

American Veterinary Medical Association.....\$4,937.15
 Journal Fund, American Veterinary Medical Association 5,112.63
 Relief Fund, American Veterinary Medical Association 4,972.94

Assuring you of our willingness to be of service to you, we remain,

Yours respectfully,

J. F. BAUDER, Cashier,
 Tenth National Bank,
 Broad and Columbia Avenue, Philadelphia.

CONTRIBUTIONS TO LIAUTARD-AMERICAN VETERINARY RELIEF FUND.

Dr. William J. Martin.....	\$ 25.00
Nebraska Veterinary Medical Association.....	25.00
The Royal Serum Company.....	25.00
Dr. J. Nattress, Illinois.....	25.00
Dr. John C. Meyers, Cincinnati, Ohio.....	25.00
Dr. F. J. Pillion, Champaign, Ill.....	10.00
Dr. W. H. Bronson, Wyoming, Iowa.....	10.00
Dr. H. S. Anderson, Grand Island, Neb.....	10.00
Dr. W. E. Bromlei, Kirkwood, Ill.....	10.00
Dr. Floyd Perrin, Spencer, Neb.....	10.00
Dr. J. F. Baldwin, Calloway, Neb.....	5.00
Dr. J. F. Mitchell, Anaconda, Mont.....	5.00
Dr. A. J. Sorensen, Stockton, Cal.....	10.00
Dr. U. H. Udall, Ithaca, N. Y.....	10.00
Dr. C. G. Shan, Washington, Kan.....	10.00
Dr. J. E. Werman, Arcadia, Neb.....	5.00
Dr. G. M. Potter, Manhattan, Kan.....	5.00
Dr. B. F. Swim, Pender, Neb.....	5.00

Dr. E. H. Killian, Manhattan, Kan.....	5.00
Dr. Brainard, Memphis, Mo.....	5.00
Lieutenant Baney, U. S. Army.....	5.00
Dr. C. E. Mock, Reygate, N. Y.....	5.00
Dr. A. T. Kinsley, Kansas City, Mo.....	25.00
Dr. A. U. Smith, Farmer, Del.....	25.00
American Vacinie Serum Company (W. J. Norris).....	10.00
Messrs. Miller & Caldemier, Louisville, Ky.....	10.00
Dr. H. B. Freeman, Rockville, Iowa.....	5.00
Southern Illinois Veterinary Medical Association.....	10.00
Dr. David W. Cochran, New York City.....	25.00
Dr. H. B. Weber, Rochester, N. Y.....	25.00
Dr. L. M. Walter, Napoleonville, La.....	10.00
Dr. W. H. Robertson, Portland, Me.....	10.00
Dr. B. M. Freed, Sharon, Pa.....	10.00
Dr. H. U. Aulger, Buckley, Ill.....	10.00
Dr. A. U. French, Cheyenne, Wyo.....	5.00
Dr. J. T. Bushing, Pearl River, N. Y.....	5.00
Dr. L. V. Newman, York, Neb.....	10.00
Dr. Enoch Jewell, Bloom City, Wis.....	5.00
Dr. C. H. Mehrs, Scapula, Okla.....	10.00
Dr. G. T. Williams, Boone, Iowa.....	10.00
Dr. U. M. Bell.....	25.00
Dr. R. A. Archibald.....	25.00
Dr. H. R. Schwarze.....	10.00
Dr. R. P. Marstetter.....	25.00
Dr. M. C. Hall.....	5.00
Dr. Fred. Anderson.....	25.00
Kline & Bernath.....	25.00
Dr. W. G. Hollingsworth.....	25.00
Dr. M. C. Linnemaun, Alphi Phi Fraternity.....	25.00
Dr. P. A. Fish, New York State Veterinary College, Ithaca, N. Y....	25.00
Dr. James Robertson, Chicago Veterinary Society.....	25.00
Dr. A. S. Cooley.....	10.00
Dr. N. Rectnwald.....	10.00
Dr. J. H. McNeill.....	25.00
Dr. G. B. McKillip.....	100.00
The McKillip Veterinary College.....	100.00
Dr. J. U. Klotz.....	50.00
Dr. L. A. Merillat.....	25.00
Dr. Otto Faust.....	25.00
Dr. J. H. Blattenburg.....	25.00
Keystone Veterinary Medical Association.....	25.00
Oklahoma State Veterinary Medical Association.....	25.00
Dr. U. J. McKenney, Brooklyn, N. Y.....	15.00
Dr. C. Roshaney, Sea Cliff, N. Y.....	5.00
New York County Medical Society.....	25.00
Dr. U. T. Gurard.....	10.00
Dr. Peter Hansen.....	10.00
Dr. Sheperd.....	25.00
Dr. Beechey.....	5.00
Dr. C. G. Glendenning, Clinton, Ill.....	10.00
Dr. F. A. Downs, Kellogg, Iowa.....	10.00
Dr. G. Ed. Leach, Wyone, Minn.....	5.00
Dr. Armstrong, Providence, R. I.....	5.00
Dr. G. U. Moffatt, Smith, Neb.....	1.00
California Veterinary Medical Association.....	25.00
Dr. N. J. Martin, Kankakee, Ill.....	25.00
Dr. W. J. Morgan, Illinois.....	5.00
Dr. R. J. McCourtney, Joplin, Mo.....	5.00
Silver dollar donation to the ring.....	46.00
Dr. Richard H. Kingston, New York City.....	25.00
Dr. O. R. Schuler, Jefferson St., Brooklyn, N. Y.....	10.00

Dr. P. V. Weaver, Glen Cove, L. I.....	5.00
Dr. Cassins Way, New York City.....	5.00
Dr. J. Ellicott Crawford, Far Rockaway.....	5.00
Drs. Gannett & Risley.....	25.00
Dr. Henry Amling.....	25.00
Dr. W. Horace Hoskins, New York City.....	25.00
The Corwin University, Long Island.....	10.00
Canadian Veterinary Medical Association.....	25.00
Northwestern Ohio Veterinary Medical Association.....	100.00
Dr. C. H. Taylor.....	15.00
Dr. C. M. Haring.....	50.00
Dr. J. M. Leichty.....	10.00
Dr. Ed. Harris.....	25.00
Dr. A. A. Eddingsfield.....	10.00
Dr. Theo. Burnett.....	10.00
Dr. H. J. Kleine.....	10.00
Dr. R. J. Sarver.....	5.00
Dr. T. E. Smith.....	25.00
Dr. Robert McCully, New York.....	30.00
Dr. C. H. Anthony, Oklahoma City, Okla.....	10.00
Dr. James T. Glennon, Newar, N. J.....	10.00
Dr. A. J. Kulp, Adel Iowa (Iowa State Alumni).....	58.00
Dr. B. J. Sims (Oregon State Veterinary Medical Association).....	25.00
Dr. R. A. Lauzader, Morrisville, Ill.....	25.00
Pittman-Moore & Co., Indianapolis, Ind.....	25.00
Charles Chase, Bay Shore, N. Y.....	10.00
H. R. Rider, Chicago, Ill.....	10.00
H. A. Greene, Danville, Ill.....	10.00
F. E. Brown, Bradesville, Ill.....	10.00
J. C. Brown, Joy, Ill.....	10.00
W. H. Welsh, Lexington, Ill.....	10.00
H. E. Bremes, Ames, Iowa (Iowa State Alumni Association).....	5.00
E. T. Letner, Paw Paw, Ill.....	5.00
W. G. Teckenbreck, Metwklis, Ill.....	5.00
A. G. Leginer, Leland, Ill.....	5.00
E. A. Drahh, Bethany, Ill.....	5.00
W. H. Shaw, Kinkead, Ill.....	5.00
A. T. Fletcher, Verden, Ill.....	5.00
Silas Kempf, Roanoke, Ill.....	5.00
H. D. Chamberlain, Belviedere, Ill.....	5.00
Draft dated Petone, Ill., on the Continental and Commercial Bank of Chicago, H. Eisenbrandt, Cashier.....	5.00
Georgia State Veterinary Association.....	25.00
F. H. Ferguson, Lake Geneva, Wis.....	25.00
R. P. Frans, Monmouth, Ill.....	10.00
W. Hollister, Avon, Ill.....	25.00
C. G. Glendenning, Clinton, Ill.....	5.00
U. J. Nelson, Monmouth, Ill.....	10.00
Tennessee Veterinary Medical Association.....	25.00
Nebraska Veterinary Medical Association.....	148.00
Hal. C. Simpson, Dennison, Iowa.....	10.00
G. A. Roberts, South-East Veterinary Medical Association, Raleigh, N. C.....	25.00
Dr. A. J. DuFrene, Selochune, Mont.....	5.00
Montana Veterinary Medical Association.....	25.00
W. T. Pattan, Sweet Grass, Mont.....	15.00
F. S. Roth, Forsyth, Mont.....	10.00
E. C. Hever, Defiance, Mont.....	5.00
J. D. Quelland, Denton, Mont.....	5.00
Dr. S. Brenton, Detroit, Mich.....	50.00
Iowa Veterinary Association, Dr. H. B. Freeman.....	410.50
G. W. Butler, Indianapolis, Ind.....	5.00
W. L. Hollister.....	10.00

Mississippi Valley Veterinary Medical Association.....	25.00
Texas State Veterinary Medical Association, E. Meggs.....	25.00
Central New York Veterinary Medical Association, W. E. Swift....	35.00
New Hampshire Veterinary Medical Association, R. W. Smith.....	25.00
New Jersey Veterinary Medical Association, Jas. M. Donough.....	25.00
State Veterinary Medical Association of Ohio, R. F. Bernath, Sec..	100.00
W. B. Rue, Chatham, Ontario.....	25.00
S. J. Wakely, Nebraska, Wis.....	3.00
Southeastern Michigan Veterinary Medical Association, H. Preston Hoskin, Secretary:	
Dr. E. E. Patterson, Detroit, Mich.....	26.00
Dr. J. J. Joy, Detroit, Mich.....	5.00
Dr. H. P. Hoskins, Detroit, Mich.....	5.00
Dr. H. Cornell, Detroit, Mich.....	3.00
Dr. H. E. State, Detroit, Mich.....	3.00
Mr. Martin Stapleton, Port Huron, Mich. (honorary member).....	5.00
Dr. L. F. Baldock, Birmingham, Mich.....	2.00
Dr. J. W. Brodie, Pontiac, Mich.....	2.00
Dr. Judson Black, Richmond, Mich.....	2.00
Dr. S. Blenton, Detroit, Mich.....	2.00
Dr. E. B. Cavell, Detroit, Mich.....	2.00
Dr. F. J. Emmer, Detroit, Mich.....	2.00
Dr. G. F. Euall, Richmond, Mich.....	2.00
Dr. M. C. Hall, Detroit, Mich.....	2.00
Dr. Jos. Hawkins, Detroit, Mich.....	2.00
Dr. E. P. Schaffter, Detroit, Mich.....	2.00
Dr. C. G. Stampf, Detroit, Mich.....	2.00
Dr. M. J. Smead, Rochester, Mich.....	2.00
Dr. J. Wardel, Mt. Clemens, Mich.....	2.00
Dr. R. H. Wilson, Rochester, Mich.....	2.00
Dr. Jos. E. Zelter, Detroit, Mich.....	2.00
Dr. E. J. Walters, Wyandotte, Mich.....	2.00
Southeastern Michigan Veterinary Medical Association (from treas- ury).....	20.00
Connecticut Valley Medical Association, A. T. Gilyard, Secretary:	
H. A. Overhill, Wash. Dep., Conn.....	5.00
Dr. P. T. Keeley, Waterbury, Conn.....	10.00
Dr. G. E. Corwin, Hartford, Conn.....	5.00
Dr. J. J. Flaherty, New Haven, Conn.....	5.00
Dr. Harrison Whitney, New Haven, Conn.....	5.00
Dr. A. C. Knapp Budgeport, New Haven, Conn.....	5.00
Dr. Thos. Bland, Waterbury, Conn.....	10.00
Dr. O. Schreock, New Haven, Conn.....	5.00
Dr. H. E. Bates, Norwalk, Conn.....	5.00
Dr. J. S. Schofield, Greenwich, Conn.....	5.00
Dr. F. D. Coles, Corwich, Conn.....	5.00
Dr. L. B. Judson, Winstead, Conn.....	5.00
Dr. C. L. Colton, Hartford, Conn.....	10.00
Dr. Chas. H. Beere, Waterbury, Conn.....	5.00
Dr. A. T. Gilyard, Waterbury, Conn.....	10.00
Dr. E. M. Beckley, Meriden, Conn.....	5.00
Dr. G. T. Crowley, New Britain, Conn.....	5.00
Dr. C. L. Chaney, New Haven, Conn.....	5.00
Dr. R. H. Davis, Stamford, Conn.....	5.00
Dr. J. L. Deveraux, Waterbury, Conn.....	5.00
Dr. E. R. Dimock, Merrow, Conn.....	5.00
Dr. V. M. Knapp, Danbury, Conn.....	10.00
Dr. Edu. Laitenin, Texarkana, Ark.....	55.00
Dr. R. D. Martin, Bridgeport, Conn.....	55.00
Dr. E. C. Ross, New Haven, Conn.....	10.00
Dr. E. L. Thornton, Canaan, Conn.....	5.00
Dr. R. S. Todd, New Milford, Conn.....	5.00
Mr. J. M. Whittlesey, Hartford, Conn.....	5.00

Connecticut Veterinary Medical Association.....	100.00
Illinois State Veterinary Medical Association.....	150.00
C. A. Cary, Auburn, Ala.....	25.00
W. B. Switzer.....	2.00
Central Canadian Veterinary Association, Prest Torrence.....	100.00
Novia Scotia Veterinary Association, A. Gill, Secretary.....	50.00
Edu. A. Cahill.....	.....
Chest & Paquin.....	5.00
M. N. Nevetto.....	5.00
U. H. Burdick.....	5.00
Daniel Emerson.....	55.00
Langder & Ferrhengbern.....	5.00
Edu. A. Cahill, Secretary.....	10.00
Dr. Gilbert, Bingham, Mass.....	5.00
Iowa Veterinary Medical Association, H. D. Bergman, Secretary....	221.20
Missouri Valley Medical Association.....	102.00
Wisconsin State Veterinary Association.....	100.00
Wisconsin State Veterinary Medical Association, Subsenptunfin Milas	180.50
Michigan State Veterinary Medical Association.....	100.00
W. B. Washburn, Tiffin, Ohio.....	5.00
A. D. Knowles, Missoula, Mont.....	25.00
F. H. Schnieder, Philadelphia, Pa.....	25.00
U. Jay Miller (check credit Iuea Veterinary Association).....	5.00
Celuardo Veterinary Medical Association.....	100.00
Douthew Tier Veterinary Association.....	50.00
D. E. Bchefold (Cermelal Veterinary Medical Association).....	5.00
Dr. D. M. Campbell.....	100.00
Illinois Veterinary Medical Association:	
Dr. E. Grab, Bethany, Ill.....	5.00
Elmore Live Stock Company, Peoria, Ill.....	25.00
Dr. A. T. Peters, Peoria, Ill.....	25.00
Dr. H. Presler, Fairbury, Ill.....	10.00
Dr. C. C. Mills, Decatur, Ill.....	10.00
Dr. Jas. Smellis, Eureka, Ill.....	10.00
Dr. F. H. Burt, Chenoa, Ill.....	10.00
Dr. T. J. Foster, Monticello, Ill.....	10.00
Dr. W. G. Nielson, Monmouth, Ill.....	10.00
Dr. F. E. Hagey, Lstant, Ill.....	5.00
Dr. C. H. Nye, Cambridge, Ill.....	5.00
Dr. H. A. Geer, Danville, Ill.....	10.00
Dr. L. A. Moore, Lexington, Ill.....	5.00
Dr. O. Moore.....	5.00
Dr. W. B. Wise, Sheffield, Ill.....	5.00
Dr. F. E. Jones, Rochelle, Ill.....	5.00
Dr. C. M. Merriman, Mt. Pulaski, Ill.....	5.00
Dr. O. W. Winters, Arthur, Ill.....	5.00
Dr. W. W. Neabitt, Lincoln, Ill.....	5.00
Dr. J. F. Gillespie, Tuscola, Ill.....	5.00
Dr. C. G. Everton, Monroe Center, Ill.....	2.00
Dr. O. Schattlery, Good Hope, Ill.....	1.00
Wr. W. M. McEvers, Chicago, Ill.....	5.00
Dr. C. A. White, Chicago, Ill.....	10.00
Dr. H. C. Curtis, Polo, Ill.....	2.00
Dr. J. E. Pyle, Tonlon, Ill.....	5.00
Dr. R. W. Langstoffs, Colfax, Ill.....	5.00
Dr. F. A. Shepherd, Fairmount, Ill.....	6.00
Dr. A. Johnson, Petonia, Ill.....	5.00
Dr. C. D. Grogan, Mendota, Ill.....	5.00
Dr. H. C. Barth, Amboy, Ill.....	5.00
Dr. C. S. Hayward, Mattoon, Ill.....	5.00
Dr. Gordon, Gibson City, Ill.....	5.00
Dr. D. S. Jaffray, Chicago, Ill.....	5.00
Aurora Serum Company, Aurora, Ill.....	25.00

Dr. Jas. Robertson, Chicago, Ill.....	5.00
Dr. J. L. Montooth, Bradford, Ill.....	5.00
Dr. W. A. Weldon, Dwight, Ill.....	5.00
Dr. R. E. Nesbitt, Clinton, Ill.....	5.00
Dr. E. L. Quitman, Chicago, Ill.....	5.00
Dr. E. A. Manuel, Des Plaines, Ill.....	5.00
Dr. D. L. Travis, Vandalia, Ill.....	5.00
Dr. C. L. Passmore, Huntley, Ill.....	3.00
Dr. John Beer, Blue Island, Ill.....	12.50
Dr. T. C. Tridbohl, Chicago, Ill.....	12.50
Dr. W. E. Warnock, Aledo, Ill.....	10.00

Note.—The above list has been reproduced just as it was received, along with other material, from the Philadelphia meeting. Any corrections as to omissions, etc., will have to be made later, if necessary.—Ed.

REPORT OF COMMITTEE ON RESOLUTIONS.

Whereas, in this great war so much is necessary of each individual in order to render the earth safe for democracy, and

Whereas, it is necessary for everyone to do everything he can whether in civil or military life, and

Whereas, so many of our profession have already entered the Army and are rendering efficient service,

Be it resolved, that we reiterate our pledge of aiding the Government in every possible way to bring about a successful termination of this world conflict and pledge our best efforts for the protection and conservation of our food and laboring animals, and

Further be it resolved, that a copy of this resolution be sent to the Council of National Defense and to the Surgeon General.

Whereas, a conservation of live stock is being recognized as one of the most important measures to a victorious conclusion of the war and also for the reconstruction of agriculture in the devastated countries of our Allies, and

Whereas, the Bureau of Animal Industry, through its efficient and patriotic employees, is rendering inestimable services not only in providing the Army, Navy and the civil population with wholesome meat food, but also in creating proper provision for the future of our live stock industry,

Be it resolved, that the American Veterinary Medical Association, assembled in its annual convention, express its deep appreciation for the splendid accomplishments of the Bureau of Animal Industry, and

Be it further resolved, that a copy of this resolution be forwarded to the Secretary of Agriculture and the Chief of the Bureau of Animal Industry.

Whereas, all branches of our Government, the animal industry as well as our colleges and experiment stations, are in need of more well-trained veterinarians, and

Whereas, this Association is regarded as a medium of expression by the veterinary profession of the United States and Canada on veterinary educational matters, therefore

Be it resolved, that this Association approves the policy of the Surgeon General's office and the Bureau of Animal Industry in regard to preliminary education and collegiate work.

Whereas, the Saddle and Sirloin Club of Chicago has shown its appreciation of the importance of the veterinary profession to the animal industry, and

Whereas, this Club has seen fit to provide a gallery for paintings of our distinguished colleagues and leading members of this Association will be the first to be placed in this art gallery.

Be it resolved, that we hereby extend to the Saddle and Sirloin Club our appreciation of this honor to our profession, and

Further be it resolved, that a copy of this resolution be sent to the Secretary of the Club.

Whereas, we deem it for the best interest of the Association to keep all of its business matters in a form available for its members,

Be it resolved, that any member of any regular or special committee of this Association who accepts any money or other contributions to be used in carrying on the work of the committee, or who spends any money in addition to the funds appropriated by the Association for the use of the committee, shall make a report of such transaction, stating the names of contributors, the amount received from each, and submit for presentation at the annual meeting of the Association an itemized statement of all expenditures. Said report to be added to or incorporated in the report of the committee and included in the printed proceedings of the Association.

Whereas, the success of the meeting of the American Veterinary Medical Association depends to a large extent upon the efforts of the local committee, and

Whereas, the meeting of 1918 has been so successful and the well-laid plans so carefully carried out, and

Whereas, so many conveniences and highly pleasing events have been prepared for our entertainment,

Be it resolved, that we extend to the local committee our earnest appreciation of their efforts to make this meeting so highly successful and hereby extend our hearty thanks for their labors.

C. P. FITCH,

A. EICHHORN,

C. H. STANGE,

JOHN REICHEL, Chairman,
Committee.

REPORT OF COMMITTEE ON VETERINARY ANATOMICAL NOMENCLATURE.

Mr. President, Members of the A. V. M. A.:

Your committee has made but little progress during the year, due to a number of factors:

1. The lateness of organization of the committee.
2. The chairman could devote very little time to the work until the summer vacation.
3. The chairman of the committee has been unable to get the second list of terms covering the circulatory and nervous systems, the sense organs and the integument, from either the members of the committee or the officers of the Association. This list was submitted to the Secretary in November, 1914 (see JI., A. V. M. A., N. S., Vol. 1, No. 5, page 636). The chairman has been unable to secure this second list from members of the committee since his appointment on the committee in 1915. A second list is now being prepared, but could not be finished for this meeting. A history of the labors of the committee is appended for the information of those directly interested and we wish to give notice that the final report will be submitted at the next annual meeting, if our recommendations are adopted.

We recommend:

1. That the committee be continued so that the work begun may be finished.
2. That the provision regarding the multigraphing of the report, which was adopted last year, remain in force.
3. That the history of the work of this committee be published with this report.

H. S. MURPHEY, Chairman.

S. SISSON.

I. E. NEWSOM.

S. L. STEWART.

HISTORY OF THE ATTEMPT TO STANDARDIZE VETERINARY
ANATOMICAL NOMENCLATURE BY THE AMERICAN
VETERINARY MEDICAL ASSOCIATION.

1. In 1911 at the Detroit meeting of the A. V. M. A., Dr. I. E. Newsom of Fort Collins, Colorado, read a paper on "Anatomical Nomenclature" (page 669, Proceedings of A. V. M. A., 1911), in which he drew attention to the chaotic condition existing by the use of, at least, four systems in this country. Resolution 7, page 684, of this Association provided that a committee of anatomists be appointed to formulate a nomenclature. This resolution was referred to the Executive Committee of the A. V. M. A. (pages 54 and 96). This was recommended to the Association by the Executive Committee and was adopted by the Association. During the next year this committee was appointed by Dr. Brenton, President of the A. V. M. A., as follows:

S. Sisson, Chairman; I. E. Newsom, S. L. Stewart.

The Association of Faculties and Examining Board appointed the same committee.

2. The report was first presented in 1912 (Proceedings A. V. M. A., pages 636 and 187). After considerable discussion by various members of the Association of Faculties and Examining Boards the committee's report, covering the general principles governing revision (page 187), was adopted and recommended to the A. V. M. A. for its adoption (page 52). The report was received and committee continued. Indianapolis meeting of A. V. M. A.

3. The committee made their second report to the A. V. M. A. at the New York meeting. This report was received, the terms submitted were published in the proceedings and a definite appropriation of \$300 allowed the committee to continue its work. (A. V. M. A., Proceedings, 1913, pages 191-226.)

4. The next meeting was planned for New Orleans in December, 1914, but was given up on account of the serious outbreak of foot and mouth disease in this country. However, the remaining lists were submitted to the Association in November, 1914. (Proceedings, A. V. M. A., N. S., Vol. 1, page 636, No. 5.)

5. The next meeting was not held then until the Oakland meeting in 1915. Letter of transmittal and second list of terms noted in proceedings Jl. A. V. M. A., N. S., Vol. 1, No. 5, page 636.

6. Personnel of committee, 1915-1916: S. Sisson, chairman; H. S. Murphey, I. E. Newsom. *Jl. A. V. M. A., N. S.*, Vol. 1, No. 5, page 516. This committee submitted a report dated June 1, 1916, which was lost, Dr. Newsom giving the report verbally. *Jl. A. V. M. A., N. S.*, Vol. 3, No. 4, page 457 (see *Jl. A. V. M. A., N. S.*, Vol. 5, No. 2, page 229.)

7. Personnel of committee, 1916-1917: S. Sisson, chairman; H. S. Murphey, I. E. Newsom, S. L. Stewart, E. S. Brashier. *Jl. A. V. M. A., N. S.*, Vol. 3, No. 7, page 936. The report is given in *Jl. A. V. M. A., N. S.*, Vol. 5, No. 2, page 229. Referred to Executive Board, *Jl. A. V. M. A., N. S.*, Vol. 5, No. 5, page 503. "The Executive Board recommends that the Secretary be instructed to multigraph the report of the Committee on Anatomical Nomenclature for distribution among anatomists of the veterinary colleges.

Motion to approve and adopt; said recommendation duly made, seconded and carried." *Jl. A. V. M. A., N. S.*, Vol. 5, No. 5, page 539.

8. Personnel of committee, 1917-1918: H. S. Murphey, chairman; S. Sisson, I. E. Newsom, S. L. Stewart.

REPORT OF COMMITTEE ON LEGISLATION.

During the past year your committee have been in constant touch with the situation at Washington as to the possibilities of the Lobeck bill.

Not ever assured of its passage—but looking to possible amendments on the floor that would make it acceptable to Congress—the Department of Agriculture and so far as possible the betterment of the condition of those in the Bureau of Animal Industry whom it was destined to succor.

The amendment to the judicial appropriation bill of a flat increase of one hundred and twenty dollars to all those who received less than twenty-five hundred dollars salary a year kept all bills intended to promote better compensation for groups of federal employees in abeyance. A favorable report from any committees to which such bills were assigned was always contingent upon the action of Congress on the above amendment. There was one notable exception to this—that of the postal employees' bill, which after many years of effort finally succeeded.

During the past year the entrance salary of all veterinarians entering the Bureau service was raised from \$1400 to \$1500.

The increase of one hundred and twenty dollars will not be applicable to those entering the service since June 30, 1917. I am informed that this may be provided for by increased appropriations to the Bureau for the year.

The Lobeck bill is still in the hands of the Committee on Agriculture, with little likelihood of its favorable recommendation and less possibility of its becoming a law in the present attitude of those most directly connected with this legislation as law-makers.

Realizing that its failure would have a very serious affect on the organization of the B. A. I. employees, I have for more than two years pointed out to those veterinarians in this organization that as veterinarians they could work more effectively through the A. V. M. A. and knowing for almost a like period the constant efforts of the American Federation of Labor to have the Bureau employees' organization become a division of that body, your committee have made untiring efforts to keep the veterinarians from this movement. The Secretary and legislative representative of the Bureau organization, Dr. Walkley, who is also a member of the Legislative Committee of the A. V. M. A., has worked unceasingly with me as chairman of the committee, and our efforts are best expressed in the fact that upwards of five hundred veterinarians of the B. A. I. join the A. V. M. A. at this meeting.

Incident to this movement, they have organized many state and district organizations and will at this convention form themselves into a national organization and from year to year meet in connection with the A. V. M. A.

May I suggest to this Association that they be considered as a section of the A. V. M. A., the same as the Association of Faculties and Examining Boards, inasmuch as membership in the national organization will demand and require their members to be members of the A. V. M. A.?

Their deliberations and recommendations may be brought in concrete form to this Association, considered by your Executive Board and their recommendations submitted for action to the A. V. M. A.

Their legislation to become a part of the legislation advocated by this Association and the power and service of our more than three thousand members become an active force in their behalf.

During the past year on two occasions efforts were made to transfer the Veterinary Corps back to the Quartermaster's Department, probably to make the situation fit in with the present status of the army veterinarians now in France. At the first effort to change our position from the Surgeon General's Department to the Quartermaster's Department was an eleventh-hour amendment which on a point of order of Senator Kenyon was ruled out of order and lost.

In the second instance it was contained in the army appropriation bill, appearing there as an amendment, but we were assured by Chairman Dent of the House Military Committee that this was a clerical error in the reprinting of the bill and was not intended to be there. Its elimination in the final bill as it passed Congress leaves our status as established.

House Bill No. 9353, known as the Cary bill, to give us the relative rank of the Medical Corps, has not been acted upon by the House Military Committee.

House Bill No. 8937, introduced by Congressman Dyer, amending the Act of June 3, 1916, known as the National Defense Bill, intending to establish the ratio of officers on a percentage basis of the total number of officers, including the Veterinary Corps, still remains in the hands of the House Military Committee.

The amendment to the agricultural appropriation bill of one hundred thousand dollars to reestablish equine meat inspection, which was discontinued in 1904, was strongly urged by your committee, many local and state organizations joining us in appealing for its passage.

This was defeated by Mr. Hoover—objection on psychological grounds—fearing the inference of our enemies that we were driven to horse meat consumption for our sustenance. Since its defeat we have added another meatless day, which must reflect a like influence.

The desirability of restoring equine meat inspection is still a pressing necessity, for the continued uncertainty of a steady supply and the limited choice that results from the single source of a city's old or broken-down horses, operates equally to limit this food having a large and fixed place in the home markets and denies us the opportunity needed of adding to the greater shortage of animal food in the allied countries.

W. HORACE HOSKINS, Chairman.

OTHER ASSOCIATIONS.

VERMONT VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Vermont Veterinary Medical Association was held at Hotel Barre, Barre, July 17 and 18, 1918.

Meeting opened at 1:30 for a short business session.

New Members—Dr. William Campbell, Dr. W. A. Hamilton, and Dr. K. W. Kennedy were elected to membership.

Due to the kindly effort of Mr. E. S. Brigham, Commissioner of Agriculture and Live Stock of Vermont, it was made possible for us to have the following distinguished guests, who are not only prominent in their respective States in the conservation of live stock interests, but are widely known throughout the United States: Dr. V. A. Moore, Professor of Pathology, Bacteriology and Meat Inspection at New York State Veterinary College (Cornell University); Dr. Lester H. Howard, Chief of Cattle Bureau of Massachusetts; Mr. J. M. Whittlesey, Commissioner on Domestic Animals for the State of Connecticut; Dr. Andrew Felker, Live Stock Commissioner for the State of New Hampshire; Dr. A. J. De Fosset, of the Federal Bureau of Animal Industry, now located in Vermont, and engaged in supervising of testing and promoting interest in the accredited herd system in registered herds of cattle in this State.

Dr. Moore gave a very interesting address on the prevention and control of contagious diseases common to live stock; and I am sure that every one of our guests and members were inspired with many helpful thoughts in modern veterinary medicine, and I am hopeful that the many interesting features of the address will, in time to come, be thoroughly ruminated, and will aid us in times when we are puzzled to make a diagnosis.

Dr. Howard followed Dr. Moore in giving a very interesting address on the control of animal diseases in Massachusetts, which was highly educational and of vital interest to every veterinarian.

The morning of July 18 a clinic was held at the hospital of Dr. O. E. Barr, and several of the major operations were performed; also a demonstration of the opthalmic tuberculin test was observed.

The meeting adjourned at 3:30 p. m.

The next meeting will be held in Burlington, January 22 and 23, 1919.

GEO. STEPHENS,
Secretary-Treasurer.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS.

The first National Convention of this Association, held at the Bellevue Stratford Hotel, Philadelphia, Pa., August 19-21, 1918, in conjunction with the fifty-fifth annual session of the A. V. M. A., was democratic, harmonious and successful throughout, and all branches of the bureau service in which veterinarians are engaged were represented.

Dr. John R. Mohler, Chief of the Bureau, honored us with his presence at some of our sessions, and assured us of his personal interest in our Association, expressing the hope that our efforts to secure recognition from Congress would be successful.

Several of our officers and delegates interviewed Dr. U. G. Houck, Acting Assistant Chief of Bureau, at convention headquarters on August 18 and 19, and he stated that he regarded the work of our Association as of the greatest importance, especially during this crisis when the Bureau forces are being depleted by the demands of war.

The officers and delegates in attendance at the convention went away convinced that the Bureau officials are doing their utmost to provide adequate compensation for the B. A. I. veterinarians, and it is to Congress that we must appeal for definite salary schedules.

We were very much gratified with the words of encouragement from officers and members of the A. V. M. A. and officers of the various State Veterinary Medical Societies and Live Stock Sanitary Boards. They congratulated us upon having a national organization of B. A. I. veterinarians, and offered to assist us in every possible way in our efforts.

The A. V. M. A. appropriated \$1,000.00 to be used by their Committee on Legislation in promoting our Classification Bill in Congress (Dr. W. Horace Hoskins, of New York City, is chairman of that committee), and they have pledged us their moral support in this work. Additional funds will be needed in order that the work of the Committee on Legislation and Publicity of the N. A. of B. of A. I. V. may not be hampered, and we earnestly hope to provide further funds by enrolling each of the 1,600 Bureau veterinarians as active members of the N. A. of B. of A. I. V.

The per capita tax for members of this Association, whether they enroll as members of State, divisional or district associa-

tions or as members-at-large, is \$3.00 per annum, or \$1.50 per term of six months.

Our National Executive Committee respectfully urges upon all subordinate bodies of this Association the importance of maintaining reciprocal relations with the various Veterinary Medical Societies and Live Stock Sanitary Boards in their respective districts, assuring those societies that the interests of this Association are not self-centered and that we stand ready and willing at all times to co-operate with them in all matters looking to the advancement of the veterinary profession. Many B. A. I. veterinarians are already active members of State Veterinary Medical Societies, and some are officers in those societies. Such affiliations will naturally facilitate the work of this Association in enlightening the members of the State Veterinary Societies regarding the Bureau work, and the need of remedial legislation in the interest of Bureau veterinarians.

S. J. WALKLEY, Secretary.

To the Officers and Members:

On behalf of the national officers elected at the Philadelphia convention I desire to express to each of you their appreciation of your vote of confidence in them, and to pledge you their efforts to accomplish the fulfillment of our aims.

The burden of responsibility for the success of our cause rests heavily upon the Legislative and Publicity Committee. It is expected that each member of the National Association will put forth his best effort in assisting this committee. There are three objectives before us for immediate attention, either of which might easily be considered first:

(a) The enrollment of new members and organization of local, State or divisional associations affiliating with the National Association, until we secure as near 100% membership as is possible. We should endeavor to enroll another 750 members by January 1. This can easily be accomplished if every one does his part. In cases where associations cannot be formed, individual B. A. I. veterinarians may enroll as members-at-large through the office of our National Secretary, Dr. S. J. Walkley, 185 Northwestern Ave., Milwaukee, Wisconsin.

(b) Each association should present some helpful suggestion to the Publicity Committee for their consideration, that a definite program may be announced by them in the very near future. I am sure this committee will appreciate assistance of this kind.

(c) Some plan should be worked out that will establish the status of Bureau veterinarians in relation to military service, that our stand in public opinion after the war may be established.

We hope to be able to announce within another thirty days much progress toward the first proposition from Pittsburgh, Ohio and the West coast.

The personnel of the Committee on Legislation and Publicity of our Association for the ensuing year, as appointed at the Philadelphia convention, is as follows:

Dr. J. A. Kiernan, Chairman, Washington, D. C. (Tuberculosis Eradication).

Dr. Jas. Fleming, Kansas City, Kansas (Meat Inspection).

Dr. John D. De Ronde, New York City (Meat Inspection).

Dr. F. R. Jones, Fort Worth, Texas (Hog Cholera Control).

Dr. W. K. Lewis, Columbia, S. C. (Tick Eradication).

J. S. KOEN, President.

CONFERENCE OF INSPECTORS IN CHARGE OF TICK ERADICATION.

One of the most interesting and instructive meetings for the inspectors in charge of tick eradication was held at the Molton Hotel, Birmingham, Alabama, Monday and Tuesday, September 23 and 24, 1918.

Dr. R. A. Ramsay, Chief of Tick Eradication Division, Washington, D. C., presided and outlined a list of important subjects for discussion by the conference which resulted in a number of resolutions intended to be far-reaching and constructive in their effect.

Dr. Ramsay stated this had been the most successful year ever undertaken under the project and this fall the government would release more territory than ever before. The reports from Louisiana surpassed all previous figures, with an average of over two million dippings a month, with Oklahoma following, showing one million dippings each month.

Mr. Fred Jones, President of the Southern Cattlemen's Association, and Hon. Robert Seals, recently elected member of the State Legislature, both from Alabama, were present throughout the conference, full of enthusiasm and ready to do anything to hasten the work—one of the greatest conservation measures ever undertaken.

The following state authorities were present and participated in the conference: Dr. C. A. Cary, Alabama; Dr. Hudson Chadwick, Mississippi; Dr. E. P. Flower, Louisiana; Dr. R. M. Gow, Arkansas; Dr. Moore, North Carolina, and R. W. Storrs, Florida.

The Bureau veterinarians attending were: **Drs. L. J. Allen**, Oklahoma; J. A. Barger, Mississippi; C. J. Becker, Alabama; E. L. Bertram, Illinois; Harry Grafke, Texas; Marvin Gregory, Arkansas; R. E. Jackson, Alabama; W. K. Lewis, South Carolina; W. M. MacKellar, Georgia; E. M. Nighbert, Florida; J. B. Reidy, Texas; H. Robbins, Georgia; E. I. Smith, Louisiana; E. P. Yager, North Carolina, and Mr. E. E. Gass, chief clerk in the Jackson, Mississippi, office, who kept notes of the official proceedings and attended to all the clerical work.

Dr. E. L. Bertram, inspector in charge, National Stock Yards, Illinois, was a conspicuous figure on account of his pleasing personality. Dr. Bertram very ably explained methods of inspecting cattle from the South which arrived at the stock yards and indicated the measure to be absolutely coöperative, inasmuch as it would furnish the Bureau definite data in case ticks were found on such shipments.

It was brought out in the conference that Alabama, Florida and Georgia were drafting a state-wide law which, from all appearances, would be unanimously passed by their respective legislative bodies this fall and winter.

As Texas has a zone law, about sixty counties would commence systematic dipping in 1919. South Carolina would, very likely, be released from quarantine this fall. Mississippi had maintained its usual high standard of efficiency during the danger period of the second year, in spite of the fact that she had spared a large number of veterinary inspectors to go to other needy states. Southeast Texas came forward with splendid results after two years of diligent preliminary work in the countries where the first tick invaded the United States. Arkansas and North Carolina were ably represented and the conference was impressed with the fact that they might be the next to triumphantly join the white area.

The meeting closed with a unanimous vote that a special communication be forwarded to Dr. J. R. Mohler and Dr. R. A. Ramsay, Washington, D. C., expressing appreciation for the privilege of coming together to discuss the practical side of tick eradication.

E. I. S.

RESOLUTION ADOPTED BY KANSAS CITY, KANSAS, UNIT, B. A. I. VETERINARIANS.

Whereas, the United States is now victoriously waging war against the Imperial German and Austrian Governments for the freedom and liberty of humanity, and for the purpose of insuring the safety of democratic forms of government, and

Whereas, it is well recognized that the continued success of this war depends equally upon the civilian army and the military army, and

Whereas, the veterinarians of the Bureau of Animal Industry, U. S. Department of Agriculture, though they have not been privileged to enter the military service, through their efforts in the eradication and control of animal diseases, the inspection of meats and other allied activities, are safeguarding the live stock industry and the health of our soldiers, and are thus performing a very necessary war work; be it

Resolved, that the veterinarians of the Bureau of Animal Industry respectfully requests the War Department to give recognition, in the form of a certificate and insignia, to those engaged in this essential war work, that they may give evidence of their contribution to the winning of the war; be it further

Resolved, that a copy of this resolution be furnished the president of the National Association of Bureau of Animal Industry Veterinarians, with a request that he bring it to the attention of the several units of this association, and to the Secretary of War, for consideration.

F. A. IMLER,
J. FLEMING,
A. L. BAILEY,
Committee.

TICK ERADICATION TALKS AT NEW ORLEANS.

A conference of the Bureau of Animal Industry employees of Louisiana engaged in the work of eradication of cattle fever ticks was held at New Orleans in the Federal building on September 21.

Veterinary inspectors and agents represented the sixty-four parishes of the state at the conference, which was called for the specific purpose of furthering the work to a definite conclusion by detailing plans for mutual coöperation.

Dr. E. I. Smith, inspector in charge, presided and clearly defined in his opening remarks the slogan for Louisiana to be: "We are going to dip until we get the last tick."

An address by the Hon. John M. Parker, U. S. Food Administrator for Louisiana, on conservation of foodstuffs and advices for coöperation relative to producing more food. He said there would be a shortage of stock food. Only 60% of normal has been put up, less bran, less chops, and other cow feeds would shorten our milk and butter output this winter; he advised putting up all winter feed possible. Tick eradication was a helping hand, as it was a source of increase of more meat and milk.

Mr. Parker brought out the information that 90% of the calves in the South were dropped in the spring. This should be remedied to prevent a shortage of milk and butter in the months we have no grasses. More of our cows should come fresh in the fall and winter months that there may be milk the year round for the children. He also forcibly impressed the conference that the Food Administration was ready and willing to back up the work of tick eradication in any way it can be of service. America, he said, was fighting for American principles. A class of foreigners came here to take advantage of conditions and not for love of America.

Dr. H. L. Darby, formerly connected with the Texas force of the Bureau in the eradication of the tick, responded to the work of the Food Administration and to Mr. Parker. He also said he would go back to Texas and spread the glad news of Louisiana's success in its eradication work.

Extemporaneous remarks by Dr. G. H. Bruns delved into some ancient history of tick eradication and the doctor's years of experience in the work has provided him with a brand that spells Big Success.

"Those who at this time of national crisis and demand for food evade the provisions of the dipping laws are slackers and should be exposed," was the opening gun fired by Dr. E. P. Flower, secretary and executive officer of the Louisiana State Live Stock Sanitary Board. Dr. Flower's figures showed Louisiana to have 1,125,000 head of cattle, reduced to round numbers of 1,000,000, at a minimum increase of \$7 per head in value as the result of dipping, means a profit of \$7,000,000 to cattle owners of Louisiana. Added to these figures is a 25% increase in 60,000 female cattle. One hundred and fifty thousand additional calves at an average of \$10 per head represents to them an additional

\$1,000,000, plus 25% increase in the milk supply of 300,000 dairy cattle, representing an increased production of 75,000 gallons of milk at 40 cents per gallon, again adds to their account \$300,000.

"Therefore, we have a grand total increase of profits of \$8,530,000.

"Charges against this for the expense of conducting the anti-tick crusade is \$995,000, leaving to the people a net profit of \$7,535,000. Is the fight worth while?

"The approximate cost per head of dipping cattle is 90 cents. I am confident that about 75% of the parishes will be released by the first of December.

"In the last fourteen months there have been shipped into the state 2,000 full-bred beef cattle, 60% of which were bulls, and already the progeny produced have fully justified the wisdom of such a venture on the part of live stock owners.

"Tick eradication made it safe to introduce blooded stock, otherwise it would have been impracticable and have resulted in a loss to the owners. For every dollar spent in this work by the state, the United States government spends two, and I consider tick eradication one of the most constructive and conservative measures of the day."

Dr. W. H. Dalrymple, professor of veterinary science, Louisiana State University, and veterinarian of the State Experiment Station, who was to have addressed the conference, was unavoidably detained at Baton Rouge and could not be present, which proved a keen disappointment to all.

Mississippi was represented by Dr. J. A. Barger of Jackson, who advised the conference how to manage ticky herds after October 1.

Natchitoches Parish, one of the largest in the state, was ably cared for by Dr. G. E. Ellis in a verbal description of the tactics used in holding and obtaining coöperation until the last tick has vanished into innocuous desuetude by the process of dipping.

Dr. J. B. Reidy, inspector in charge of tick eradication, Houston, Texas, recounted the road to success was through the efficiency of the supervising inspector of a county. He should be proficient and master of every situation; know how, why and when the benefits are to be derived, able to give reasons for what you do, for it is education that spells success in tick eradication.

Dr. E. I. Smith, inspector in charge of Louisiana, closed the conference with impressive heart-to-heart remarks, showing clearly his appreciation of the splendid coöperation received at all

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times from the Live Stock Sanitary Board, the city and county press, nearly all cattle owners, and his own force, well and ably contributing to the constructive progress of the cattle industry in Louisiana by tick eradication.

Everybody looks forward to these conferences with an eager spirit, for nothing puts a tick eradicator more on his metal. The discussions engaged in by all bring out the underlying principles that obtain more ready results, uncovering all dormant matter. A tick eradicator alive to the situation will go back home better fortified for his having come. E. HORSTMAN.

TRI-COUNTY VETERINARY ASSOCIATION.

The Tri-County (Ohio) Veterinary Association was formed at Greenfield, Ohio, on October 2, by the veterinarians of the counties of Highland, Ross, and Pike, when the following officers were elected:

Chairman—Dr. M. J. Jones, Lynchburg, Ohio.

Vice Chairman—Dr. O. A. Tudor, Greenfield, Ohio.

Secretary-Treasurer—Dr. W. R. Lukens, Hillsboro, Ohio.

STATE VETERINARY MEDICAL ASSOCIATION OF TEXAS.

The meeting of the State Veterinary Medical Association of Texas was held at College Station, Texas, on July 29 and 30, 1918, and from point of attendance, good fellowship, and general excellence of papers presented and work done, must be classed with the very successful meetings of the year.

The regular meeting place of the association is at Fort Worth, but due to the fact that the formal opening of the State School of Veterinary Medicine of Texas was to take place July 30, it was thought best to hold the veterinary meeting at this time and place to allow the members to become better acquainted with the school facilities and the men having veterinary education in charge in Texas. It was voted at this meeting to allow any B. A. I. employee who was a regular member in good standing in any state veterinary medical association to become a member of this association, should he be moved to Texas, by producing satisfactory evidence of such membership, and signifying his desire of becoming a member; this without any other fees than

the regular payment of dues, and his standing in this association to be the same as in that from which he came.

Twelve new members were taken into the association, which now has a membership of 139, owes nothing, has a comfortable balance in the treasury, and is upon a sound basis.

The literary part of the program was excellent, and the following papers were presented and well discussed:

"Hemorrhagic Septicemia, Its Clinical Diagnosis," Dr. H. Jensen, Kansas City, Mo.

"Hemorrhagic Septicemia, Laboratory Diagnosis," Dr. H. Schmidt, College Station, Texas.

"Hog Cholera Control," Dr. F. R. Jones, B. A. I., Fort Worth, Texas.

"Diagnosis Contagious Abortion in Cattle," Dr. A. T. Kinsley, Kansas City, Mo.

"Treatment Contagious Abortion in Cattle," Dr. R. P. Marsteller, College Station, Texas.

"Tuberculosis Among the Beef Breeds of Texas and Methods of Control," Dr. E. F. Jarrel, Fort Worth, Texas.

"Anthrax and Its Control," Dr. W. H. Dalrymple, Baton Rouge, La.

An all-day clinic was held at the college hospital July 30 and the clinic was so large and varied that it could not be completed in one day, so several men stayed over the following day to help with the operations. Dr. W. G. Gregory was in charge, and conducted it in an able manner.

The evening of July 30 was set apart for the formal opening of the State School of Veterinary Medicine, of Texas, and the exercises were enjoyed by everyone present. Dr. R. P. Marsteller presided, and addresses were made by the following: Drs. Mark Francis, A. E. Flowers, E. F. Jarrel, W. H. Dalrymple, Frank R. Jones, W. G. Gregory, and much merited praise was bestowed upon Dr. Francis and his coworkers for their untiring efforts in bringing this magnificent school into existence. The school is well equipped and is housed in one of the most beautiful buildings on the college campus.

The meeting adjourned, thanking the College Station folks for their hospitality and kindnesses, and pledging entire loyalty to the new school, its aims and its aspirations.

ERNEST M. WIGGS, Secretary-Treasurer.

MEETING OF AMERICAN HUMANE SOCIETY.

At the annual meeting of the American Humane Society, held in Chicago recently, one afternoon was devoted to the work of the American Red Star. Mr. G. E. Wentworth, Superintendent of the Chicago Stock Yards Company, gave an interesting address on the transportation of army horses and advocated the appointment of an official veterinarian who should have authority to modify the twenty-eight or thirty-six hour unloading in transit regulatories where the comfort and safety of the horses would be enhanced. In certain cases horses are now unloaded in severe storms into stock pens without shelter in order to comply with the letter of the law. Mr. Wentworth also paid a tribute to the government veterinarians in their successful efforts to cope with shipping fever.

Mr. Wayne Dinsmore, Secretary of the Percheron Society of America, also spoke on the probable shortage of horses in this country in the near future. He states that one million horses and one-third of a million mules had been shipped to the allied armies, and three hundred and fifty thousand horses and mules had been supplied to the American army. Foreign military officers praised the quality of American horses and mules highly. When it was necessary to get guns, ammunition and supplies to the front lines under shell and machine gun fire and over almost impassable ground, the American horses and mules were "there with the goods."

Mr. Dinsmore also advocated state aid to approved stallions along lines so successfully carried out in France and England.

Dr. W. Horace Hoskins also spoke on the American Army Veterinary Service and paid a fitting tribute to Major Harry D. Gill, whose recent death in the service was a shock to his many friends.

Dr. Hoskins also told of the efficient work of the army veterinarians in alleviating the suffering and protecting the health of the army horses and mules.

Such meetings as this with the support of veterinarians will be of great value in helping to place the efforts of those interested in humane treatment of animals on a practical and helpful basis.

N. S. M.

NECROLOGICAL.

MAXIMILIAN HERZOG.

The members of the Veterinary Inspectors Association of Chicago were greatly grieved to learn of the death of Dr. Maximilian Herzog. In the past the Association has frequently been honored by his presence at their meetings as well as at their annual banquet, where he never failed to please and say something that was instructive and helpful in our work. In recognition of the deep interest that Dr. Herzog has taken in the veterinary profession, this Association saw fit to make him an honorary member several years ago.

Some of the older members of the Association have borne an intimate acquaintanceship with him for a number of years, while others had the honor of receiving instructions from him. All the members of our Association feel that not only have they lost a valuable contributor to the veterinary profession, but also a sincere friend, who always labored for the advancement of veterinary science as well as the profession to which he belonged. And,

Whereas, "The Great Avenger, Death," has struck down our friend during a period in his life in which he was of most value to science; therefore,

Be it resolved, That this Association has lost a personal friend and a valuable contributor to science, and one by whose encouraging words and pleasing personality we were stimulated to higher thoughts and nobler aims; and,

Be it further resolved, That we extend to Mrs. Herzog our sincere sympathy in this hour of her bereavement; also that a copy of these resolutions be spread upon our records and a copy sent to Mrs. Herzog. (Signed) THE COMMITTEE.

D. R. GILLIES,
B. RAFFENSPERGER,
F. H. BENJAMIN.

The Journal deeply regrets to have to announce the sad death of Major Harry D. Gill, fuller notice of which will be given in our next issue, as the details have not been received as we go to press.

MISCELLANEOUS.

THE EXCISE TAX ON MEDICINES.

(Editorial Note: This article is reprinted because of its importance to veterinarians. Immediate action should be taken.)

A matter of the utmost importance to physicians is the proposed increase of the federal excise tax on so-called "proprietary medicines" from 2 per cent (the present tax) to 10 per cent. According to the newspapers, this increase has been agreed upon by the Ways and Means Committee. If it were to be placed only upon what the physician understands as "proprietary" medicines, and what the layman calls "patent" medicines, none of us would object, since, when the law was originally passed, it was undoubtedly the intention of our lawmakers to restrict the burden to preparations of this kind. Unfortunately, the law was so loosely drawn that it is capable of almost any interpretation, and, as the Government needed the money to carry on the war, application has been made as sweeping as possible.

As the law is being administered at the present time, a very large majority of the medicinal preparations used by the medical profession come within its scope, the only clearly defined exceptions being remedies that are included in the U. S. Pharmacopeia and National Formulary. All preparations that are made under United States patents, that are protected by trade-mark, that are recommended as cures or remedies for diseases or disease conditions, that have disease-name designations, or to which is definitely attached the name of the deviser or the producer, are subject to taxation. The same product may be free from taxation when made by one house, and subject to taxation when made by another house, if the one has trade-marked the name of the product and the other has not. Many inequalities of this kind might be mentioned.

If the tax is increased to 10 per cent without modification of the law, we believe that probably 75 per cent of the medicines used by doctors will be affected. Since in the last analysis the sick man pays the tax, the burden will fall upon him. Nearly all definite synthetic remedies introduced within recent years will be taxed, including such substances, now made in America, as adrenalin, novocaine (procaine), salvarsan (arsphenamine), vero-

nal (barbital), and dozens of others. Many other chemicals that are sold under trade-marked names, like atophan, chlorazene, and the like, will be taxed heavily. The Compound Cathartic Pill will be free from taxation because it is official, but the non-official anticonstipation pills of all kinds will be subject to taxation. Dover's Powder will be free from taxation because it is official, but Hinkle's Cascara Pill will be subject to taxation because the word "Hinkle" has become part of its name. To give any information on the label concerning the employment of any product, even though information of this kind is vitally necessary for correct application of the drug, will make it subject to taxation.

Physicians who object to paying more for their medicines, and who believe that no additional burden should be placed upon themselves and their patients, should express their feeling in this matter to their congressmen and senators. Medicine is a necessity for the sick. While it may be wise that it should bear part of the war burden, this burden should be light. Let the heavy taxation be restricted to luxuries and non-essentials, such as the so-called "patents," the cosmetics, and things of this kind.

If you are interested, as of course you are, speak now, or be prepared to take *your* medicine, expressed in increased cost of the necessities of your practice.—*Exchange*.

WOUNDED ANIMALS NOW GET HOSPITAL TREATMENT FROM RED STAR.

Did you ever stop to think what a debt you owe the faithful, uncomplaining horse for his valiant services in helping stem the advance of the German hordes? Even in this day of motor transport the successes of the Yanks at Chateau Thierry and St. Mihiel would have been almost impossible without the aid of horses and mules to carry food and ammunition to the men in the front lines and to bring up the big guns.

"Horses are as much needed to carry on the operations of war as they were a thousand years ago," said Dr. William O. Stillman, president of the American Humane Association, in session at the Congress Hotel. "In difficult terrain the soldiers would starve if animals were not used to bring up food. Attacks would fail and defenses crumble if it were not for ammunition and guns brought up by horses and mules."

To care for these invaluable allies the Humane Association has organized a department known as the Red Star Animal Relief, which is now coöperating with the Army Veterinary Corps. When the war horse is wounded or falls sick, instead of being knocked in the head with an ax, as in the days of old, he is hoisted into a cushioned motor ambulance—if his wounds are not mortal—carried gently to an immaculate field hospital, operated on under an anæsthetic and later turned loose for a holiday of convalescence in a paddock.—*Chicago American*.

CONFERENCE OF MISSISSIPPI BUREAU OF ANIMAL INDUSTRY EMPLOYEES.

The employees of the Bureau of Animal Industry engaged in the work of tick eradication in Mississippi held a very beneficial conference in the Board of Trade, Jackson, Miss., Saturday, October 5, 1918.

Dr. J. A. Barger, Inspector in Charge, prepared a very searching program for the purpose of touching on all the practical subjects of the project, and presided over the conference in his usual firm and gentle manner, so that addresses and discussions followed on regular schedule time.

The morning session was devoted to addresses from various individuals within and without the state. Hon. S. J. Taylor, Holstein breeder and dairyman from Jackson, Miss., was the first on the program and proved more than entertaining to the audience, inasmuch as he possesses unusual tact as a speaker and a man who can quickly apply practical ideas. Mr. Taylor drew a vivid comparison between the food values of milk and other animal products, lauded the work of tick eradication in the state, paid a high tribute to the personal character and ability of the inspector in charge, and closed his remarks by inviting everyone to join him at the noon hour at his milk depot on State Street to drink good old-fashioned buttermilk and pure sweet milk produced from his splendid Holstein herd.

Other speakers who followed attracted unusual attention. Dr. E. P. Flower, from Louisiana, was unable to be present on account of sickness, and the conference regretted very much his absence—the Doctor is very popular among all Bureau men.

Dr. J. J. Jones, of Mississippi, held the undivided attention of the audience with his remarkable address, "One Man." Dr. Jones concisely showed what one man had accomplished under

adverse circumstances, and made the principle applicable to tick eradication.

The afternoon session was devoted to general discussions of prepared subjects by speakers called from the floor. The topics were broad and comprehensive and very ably discussed by all who volunteered or were called upon. The conference closed at 4 p. m., after adopting several excellent resolutions, notably thanking Mr. Taylor for his courtesy in inviting all of the members to lunch; thanking several outsiders for their remarks; and, finally, a very appreciative one to the Chief of the Bureau of Animal Industry and the Chief of the Tick Eradication Division for permission to hold such a conference.

Dr. Barger is, indeed, very popular among the tick eradication forces and never fails to attract less than extraordinary attention, and he is to be highly congratulated on the manner in which he has handled difficult matters connected with his duties in Mississippi during the three years he has been chosen by the Bureau to direct the work of tick eradication. E. I. S.

ASSISTANT CHIEF, BUREAU OF ANIMAL INDUSTRY, APPOINTED.

The Secretary of Agriculture on September 26, 1918, announced the appointment of Mr. B. H. Rawl as Assistant Chief of the Bureau of Animal Industry. The appointment became effective on October 1. Mr. Rawl has been Chief of the Dairy Division of the Bureau of Animal Industry since 1909, and, in addition to his new duties, he will continue to supervise the work of that division, the scope of which during the past nine years has increased six-fold and now reaches two-thirds of the States.

Mr. Rawl was graduated from the Clemson Agricultural College, South Carolina, in 1900. He later took a special course in dairy husbandry at the Pennsylvania State College and the University of Wisconsin, and served as Assistant Professor of Animal Husbandry and Dairying at Clemson College from 1902 to 1905. He entered the service of the Bureau of Animal Industry as dairy husbandman in 1905, and, as indicated, was made chief of the division in 1909. He is a trustee of the Clemson Agricultural College and a member of the American Association for the Advancement of Science, of the South Carolina Agricultural Society and of the South Carolina Live Stock Association.

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PEACE.

"To reap the harvest of perpetual peace,
By this one bloody trial of sharp war."
—Richard III.

As we were getting our material in readiness for the December Journal, the joyful news was flashed over the cables that the roar of cannon and the rattling of sabres had ceased over the battle fronts in Europe. Or, in other words, an armistice had been signed, and the beginning of a new era in the history of nations was in sight, if not actually here.

If the world is to have perpetual peace after the past fifty months of bloody strife, which is sincerely to be wished for, then the sacrifice, appalling as it has been, will not have been in vain.

All the nations grouped on the side of humanity and civilization have had their share in the victory, and all arms and branches in the services of the different countries have had their places to fill in the victory machine; and we believe that when history has recorded the achievements of each and all, those of the veterinary services will receive their due mede of recognition, although the world, generally, may not be apprised of them. We are familiar, from record, with what some of the European army veterinary services have accomplished in the conservation of

animal life and usefulness at the front; and we are convinced that our own authorities must now realize, and recognize, the immense importance of a regularly organized veterinary service in connection with our own army, as there can be no doubt, whatever, that the Veterinary Corps of the United States Army has fulfilled its mission and given an account of itself equal to that of any other nation.

It has been said that it takes a calamity to bring about reforms, and there can be little question that the world's calamity through which we have just passed will have been the means of firmly establishing the veterinary profession, both civil and military, in this country, as one that is absolutely essential to the country's wellbeing in times of peace as well as in those of war.

An army service so organized and equipped as to be able to return to usefulness at the front some 80 per cent. of wounded animals, which the British veterinary service is said to have done, is bound to receive recognition, as it means not only the maintenance of efficiency of the fighting forces, but the saving of almost fabulous amounts of money.

We feel sure that our United States Veterinary Corps has done its share, in its own special department, in bringing the war to a successful issue, and The Journal hopes that when its duties are fulfilled, both overseas and at home, the members will return safely to engage in whatever branch of professional work may await them.

It has been an uphill pull to gain full recognition of the veterinary branch of our national army, but it seems to have come, and come to stay, even if it did take a world's conflict to hurry it along; and those who worked so earnestly and indefatigably to bring it about must now feel compensated for what they did toward its accomplishment.

ANTHRAX INFECTION DIFFICULT TO CONTROL.

Reports from different sections of the country with regard to anthrax would indicate that the spread of the infection is, unfortunately, rather on the increase than otherwise, notwithstanding the efforts of sanitary organizations in the different states whose purpose is to endeavor to check the spread of the infection of this, as well as that of other contagious, and expensive, animal maladies. We believe that good results are being

obtained by the intelligent use of preventives in the shape of vaccines and serums, but the coöperation of stock owners in the enforcement of sanitary regulations seems far short of what it ought to be in controlling anthrax infection. However, there are so many carriers of this infection that it is difficult, even with prescribed sanitary regulations reasonably carried out, to place a check on the numerous sources through which it may be introduced, and concerning which many stock owners have little or no conception. Some idea of these sources may be had, as well as of the insidiousness of anthrax infection, from the last annual report of the Chief Veterinary Officer of the British Board of Agriculture and Fisheries, a part of which we take the liberty of quoting in this connection.

During the calendar year (1917) there were 423 outbreaks of anthrax confirmed by laboratory tests—201 in England and 202 in Scotland.

With regard to the 343 outbreaks which occurred on previously clean premises, inquiries pointed to the following being the probable source of origin:

1. Effluent from tanyards or other industrial undertakings getting into streams	2
2. Feeding of infected carcass offal to swine, etc.	1
3. Use of imported feeding stuffs.	203
4. Use of artificial manures (commercial fertilizers) of animal origin on the land.	34
5. Use of both imported feeding stuffs and artificial manures.	49
6. A recent death, not reported, but not improbably anthrax.	10
7. No explanation obtainable.	44

Eight human beings developed anthrax, one of whom appeared to have contracted the disease whilst handling affected swine with a view to examining their throats; the others probably became infected as a result of slaughtering affected animals or cutting affected carcasses.

The handling of anthrax-infected hides is not an uncommon source of the origin of outbreaks in tanneries in the United States. Only last year the health authorities of Massachusetts reported an outbreak where twenty-five tannery workers became infected, in three contiguous towns, from a shipment of hides which was traced to Hankau, China, as the point of origin.

The effluents from such tanneries getting into streams would be a very fruitful source of spreading the infection amongst live stock on pastures bordering such streams, instances of which have already been reported, we believe, in our own country.

The sources of origin which impressed us most were those of infected feeding stuffs, and commercial manures of animal origin,

although the writer has, on more than one occasion, experienced an outbreak of anthrax from infected commercial feeds, and we have read of infection being introduced and scattered over the land in infected manures, possibly of foreign origin where sanitary conditions were not observed, as may have been the case in Great Britain, which country does, or used to, import considerable quantities of manures from other countries, in the form of bones and bone meals.

Be that as it may, we believe it would be well to give more consideration than hitherto to these two probable sources of origin, especially in places where the infection had not previously existed, knowing that they have been "found guilty," or at least, extremely suspicious, in other countries. However, the various sources of origin of anthrax infection which we have enumerated, and others, no doubt, which we have not alluded to, only go to emphasize the truth of our original assertion, that anthrax infection is difficult—in fact, extremely difficult—to control, which would suggest that efforts along sanitary lines should be redoubled in connection with this contagious, fatal, and most expensive communicable disease.

RESTRICTIONS ON PAPER.

The Pulp and Paper Division of the War Industries Board has required a reduction in the amount of paper used by the Journal the present year, which means several thousand pounds less than were being used before the requirement came into effect, and previous to the recent large addition to the membership. To meet this requirement of the Division, we will be compelled for the present to economize as much as possible in order to keep within our allowance of paper.

Therefore, if our readers should observe a slight reduction in the number of pages of reading matter in this and subsequent issues, they will know the reason why. It is to be hoped, however, now that hostilities in Europe have ceased, these restrictions may be removed earlier than at first anticipated.

THE VETERINARY PRACTITIONER IN THE CONTROL OF INFECTIOUS DISEASES.

VERANUS A. MOORE, Ithaca, New York.

The great war in which we are engaged, with its unprecedented tax upon the resources of the country, has placed in bold relief not only the patriotic but also the professional duties of the veterinarian. Not until the recent demand for animal products did our people realize the enormous toll that is paid annually to the ravages of disease: Heretofore, the reported loss of hundreds of millions of dollars from infections made little or no impression, for there were animals enough and to spare; but today, a single death from disease is an appreciable loss to the nation. It is not strange, therefore, that animal owners and economists should ask why there should be such great waste from preventable diseases. At such a time, it seems fitting to inquire into the agencies that are operating to check these losses.

In the past, various efforts have been made to protect animals against infectious diseases but the successful measures have been those centered in the veterinary profession. From the beginning (for Hippocrates, the father of medicine, was a student of animal diseases) veterinarians have been charged with the protection and treatment of animals. In early times, however, they had no knowledge of the infectious maladies and consequently means for combating them have developed in conjunction with the discoveries concerning their nature.

The introduction of departments of veterinary science in our land grant colleges was the beginning of American efforts to combat intelligently infectious diseases. These departments were presided over by men trained in the schools of Europe. They brought to this country the experience of the old world in the protection of live stock and, further, they introduced the experimental method of studying animal diseases. Growing out of this, the Federal Bureau of Animal Industry was established. The organization of state veterinary service; the founding of colleges for research and instruction; the enactment of sanitary laws and others to govern the practice of veterinary medicine followed in rapid succession. From these activities, an American veterinary profession has developed consisting of about 2 to 5 per cent re-

search workers and teachers, 15 to 18 per cent state and government live stock sanitarians and inspectors and 80 per cent practitioners. These constitute the interdependent forces in our warfare against animal diseases.

Prior to this, a few great leaders* of science had appeared who enunciated hitherto unrecognized truths and principles concerning natural phenomena and whose works not only laid the foundation but also guided the development of rational medicine. Their work, together with the evolutions in the auxiliary medical sciences of biology, chemistry and physics, have changed the habit of human thought concerning the origin of plagues, and the naturalness of the infectious diseases has been recognized. As a result, veterinary medicine has been transferred from the realm of empiricism to the domain of applied science.

The changes have been exceedingly rapid.† With the succession in so short a time of so many new and fundamental discoveries, it was difficult for veterinarians to be always on the right side of the facts. We stand, you and I, whether in research, teaching, administrative work or practice, in the midst of a constant evolution of facts and development of truth. As another has put it, "The truth of yesterday is not the truth of today. The truth of today is but the parent of that which is to be tomorrow." Nowhere have the advances been more conspicuous than in the conception of infectious diseases and man's power to overcome them.

The beginning of progress, and so easily succeeding advance, was made through the discoveries of research workers. It is the function of teachers to incorporate this new knowledge in their course of instruction, and of practitioners to apply it. The live stock sanitarians have to formulate rules for interherd and interstate dealings, while the inspector protects the human family against the diseases of animals communicable to man. The sequence is a natural one, for it does not presume to apply knowledge before it is acquired. However, the attraction of discovery tends to focus the public eye on research workers and those who enforce the laws growing out of their findings. But the desired

*Among these should be mentioned Virchow and his "cellular pathology"; Darwin and "the origin of the species;" and Pasteur and the "explanation of fermentation and specific etiology." These are fundamental to an understanding of the laws of disease. More recently the theories of immunity by Ehrlich and Metchnikoff are basic in an understanding of prophylactic treatment.

†This can be appreciated from the fact that veterinarians are still living who began their professional career before the cause of a single infectious disease was known; before specific reactions for diagnosis were dreamed of; and before the means of dissemination of epizootics were anything more than mystery.

results, the minimizing of disease, cannot be obtained without the practitioners, who, from the very nature of their work, naturally become the agency of first importance in applying the principles of preventive medicine.

The veterinary profession is gradually defining its purposes and the ideals toward which it is working. These are subject to change as a result of new discoveries. In the "old days," the aim of the practitioner was to cure the animals suffering from infections. That was all the scientific conceptions of the time allowed him. With the advent of specific etiology, his possibilities extended to their control. Finally, with greater knowledge, a new ideal was conceived, namely, the elimination of epizootics altogether.

Formerly, the practitioner was helpless in combating animal plagues. Today, he is successful in proportion to his knowledge of them and his ability to apply it. As knowledge increases, empiricism diminishes. The present understanding of disease furnishes the practitioner with a code by which he can determine the procedure to be followed in all cases. As a result, he is the repository and dispenser of the technical knowledge necessary to direct the causes of disease and pestilence out of our flocks and herds. He has become a positive factor in the conservation of animal life. He is to become, and in places he already is, the constructive leader of animal husbandry. Veterinarians are the only men who are trained in the combination of sciences required to interpret the phenomena of animal diseases and to specify methods for their control. While this imposes a heavy responsibility, it is no greater than the opportunities. With every advance in the knowledge of disease, there is a corresponding obligation placed on those who should apply the new truth.

If we analyze the routine of the practitioner, the significance of his position is apparent. He is the first person qualified to make a diagnosis who sees the infected animal. If the proper confidence exists, he is called as soon as there is indication of trouble. It is the practitioner, therefore, who can direct the care of infected animals in time to check the further spread of the virus. An error or delay at this critical moment may prove the beginning of a serious epizootic. The diagnosis, the isolation, the reporting to officials and the precautionary instructions to adjoining owners of animals are all in the hands of the man who is called first. In these circumstances, the opportunity and the obligation to apply the principles of preventive medicine are his.

He is held by the tenets of the Hippocratic oath to the application of this knowledge. The serious losses that have resulted from the failure of veterinarians to observe these principles are well known. Likewise, you can remember the threatening outbreaks that were prevented, and the herds that were saved, because the practitioner did the right thing at the proper time.

The work of Apsyrthus of Bithynia, the Roman veterinarian in the fourth century, is of interest in this connection. He differentiated glanders and, by isolation and quarantine, controlled it. He was neither aided nor protected by statutory laws. But, single-handed, a man of science and close observation, he fulfilled the mission of his calling and saved the horses for his country's army. He is a striking example of individualism in sanitary science.

It is not necessary, however, to consult the archives of the ancients for illustrations. I well remember the emphasis Prof. Bang placed on the work of individual veterinarians who came in contact with the herds themselves and who knew and understood the diseases that existed and the dangers that threatened. The success, in Denmark, of the Bang system is due largely to the efficiency of the practitioners who find the infected herds and interest their owners in purifying them. Prof. Bang recognizes, more keenly than any other official of my acquaintance, the duties of the individual members of his profession. He believes that to eliminate infections, the veterinarians must work with the owners, secure their cooperation and instruct them in the principles of prevention. He says frankly that the greatest value of his method is "that it teaches the owners how to keep their herds clean."

We all know practitioners who, by their understanding of the diseases of animals and of the mental attitude of their owners, have the confidence and cooperation of their clients. The problem before us is the suppression of preventable diseases and the sooner we learn to utilize all the agencies, physical and psychological, necessary to accomplish that end, the better. The crucial test of a professional man is his power to work with other men and his ability to bring to his aid the intelligent efforts of those whom he would serve.

The purpose of veterinary education in this country has come to be, as it always was in Europe, to train men in the methods of diagnosis and control of infectious diseases, as well as of the others. We have recognized finally that schools must insist on

training their students in both the theory and application of the sciences of veterinary medicine. The students must be disciplined in laboratory and clinical work. Men who have such preparation, and who possess the professional instinct, know the necessity of early diagnosis, the danger of delay, and that to succeed they must work with natural laws, not against them. They see in practice the necessity for correlation of research, technical instruction and official supervision. These men understand perfectly that there is no technical knowledge required in the administration of serums or vaccines that is not equally applicable to other practices, and that the principles of immunity and prophylactic treatments are integral parts of their professional knowledge.

Further, American veterinary literature is steadily improving. Specialists are developing along many lines and experts in diagnosis, with well-equipped laboratories, are becoming more numerous. It is a source of congratulation that with the greater demands imposed upon practitioners by the live stock industry, there are opportunities for adequate preparation, quite as satisfactory as in other professions. This makes it possible, for those who will, to qualify in the sanitary and control work called for in their respective communities and to do the work either alone or in coöperation with the state or federal government.

The practitioner should take the initial steps in the suppression of infectious diseases locally. It is a part of his professional duty. I desire to mention a few of the many reasons why he should take a deeper interest in the conservation of animals and participate to a greater extent in the supervised sanitary projects.

1. The local practitioners are the advisors, and should be the teachers, of their clients in all matters pertaining to animal diseases. They know the conditions and should give wise instruction.

2. They are near and can be obtained quickly to make the diagnosis and to inaugurate immediately preventive measures. This is all-important, as prevention usually depends on prompt action.

3. Veterinary practitioners are professionally educated men. If it is necessary to call a stranger to apply a modern test or preventive agent, it tends strongly to belittle, in the opinion of the public, the ability of the local veterinarian, and indirectly reflects upon the efficiency of the profession.

4. The communicable diseases, while very important, constitute the minor part of the troubles for which the service of

practitioners is required. To have the affections that cause the greater losses properly attended, there must be competent men in the profession. Can we hope that boys with the education and ability necessary to deal successfully with these subtle problems will enter this profession unless it is so oriented that they can expect to do all of the legitimate veterinary work of their future clients? If the veterinary profession is to stand, its practitioners must be qualified to do the work required of it and be recognized.

5. If the newer projects for the suppression of communicable diseases are successful, to be of value, they must be extended to the flocks and herds generally. Owners may hesitate to hand over their animals for tests or treatment by strangers, without professional representation, when the veterinarians in whom they have confidence and who are competent to do the work are not recognized.

As a long-time laboratory worker, I am not emphasizing the superior opportunities of practitioners in the control of infectious diseases with any thought of disparagement of other and correlated agencies. They each have their place to operate beneficially in our progressively improving system of control. I feel that in the past, at least, there has been a tendency to place too much emphasis on "man-made" laws and tissue reactions, rather than on reaching an understanding of the natural laws governing them and the limitations of specific tests. Not infrequently such failures have created grave suspicion as to the integrity of the work. In sensitive biological reactions, variations may occur due to conditions not fully understood and which perhaps cannot be interpreted with present knowledge. In all of our work, we are dealing with scientific facts and principles that no truly professional man would violate knowingly.

Finally, the practitioners establish the points of contact between the live stock owners and the profession. Like an electric system, if this contact is not well made, the whole battery of useful, technical knowledge, now available, is of little or no use. For this reason, and the great need to conserve our animals, I appeal to practitioners not to be found wanting in their work as sanitarians. I also believe that official veterinarians should cooperate with them as much as possible. This seems to be the only plan that will bring into direct and active operation all of the forces necessary for success.

LAMENESS OF OBSCURE ORIGIN AND SOME OF ITS CAUSES.*

GEO. H. BERNs, Brooklyn, New York.

Among the many difficult problems the practitioner of equine medicine and surgery is called upon to solve, there are few more perplexing than the positive diagnosis in cases of lameness of obscure origin. Upon a correct diagnosis as to the causes and locations, depends the more important prognosis, which may be a means of greatly adding to, or seriously detracting from, a veterinarian's reputation. I have made no new discoveries and have no startling original theories to advance, but I fully believe that this subject is of sufficient importance to merit consideration and a free interchange of views by the gentlemen present. The conclusion arrived at, and the opinions expressed, are chiefly based upon personal observation, experience and a limited knowledge of the anatomy and physiology of the locomotory apparatus of the horse.

Upon post mortem examination and in the dissecting rooms of veterinary colleges, there are many pathological conditions found which during life caused lameness and must have been difficult to diagnose. Dry arthritis, calcification of synovial fringes, incomplete fractures, incipient splints, spavins and ring-bones, structural changes in ligaments, tendons, muscles and bones are met with, but form only a small percentage of the many cases seen in daily practice.

Abnormal conditions within the foot are, in my opinion, responsible for at least 50% of all the cases of obscure lameness. In practice, the lame horse, if he does not recover within a reasonable time, is invariably disposed of by the owner, and the veterinarian loses track of him and the chance for a post mortem examination.

In the dissecting room the student is much more interested in the gross anatomy of the foot than in minute pathological lesions in the pododerm or distal phalanges articulation, which might require hours of hard work and diligent search to locate.

To that condition commonly designated as contraction of the foot, producing inordinate pressure upon the sensitive structures within, many modern writers on lameness of horses have

*Paper presented at 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

given but little attention. I am well aware that many authorities look upon contraction as simply a secondary condition, resulting from lack of functional activity. In other words, if a horse is lame from any cause for a length of time and does not place a proportionate amount of weight upon the foot of the affected limb, the foot or more especially its heels will atrophy and its horny covering sink to a greater or lesser extent. I freely admit that this is the case, but thirty-eight years of continuous practice in a large city among all classes of horses has convinced me that contraction and undue pressure resulting therefrom is the primary cause of very many forms of lameness; some of which are extremely difficult to locate. Consider for a moment the very delicate and complicated anatomical construction of the horse's foot. Consider the vascular and highly organized keratogenous membrane covering all parts of the foot and confined within a very small space between the unyielding horn of the sole, bars, heel and wall on the outside and the pedal bone with its backward projecting wings and more or less ossified lateral cartilages on the inside. Consider the perfect hinge joint (coronæ pedal), the magnificent pulley-like arrangement of the navicular, its ligaments, smooth, gliding surface for the perforans, and its synovial membranous covering. Think of the highly organized coronary cushion, the principal horn secreting structure of the foot, the wonderful dove-tailed union between the horny laminae of the wall and the delicate podophylous tissue. Reflect upon the many abuses, loss of natural environments and curtailment of functions, domestication has forced upon the horse, and it will be no surprise that the foot should suffer from disease very much oftener than any other part of the entire locomotary apparatus.

The unshod foot, in a normal condition, will expand and contract at every step; contract while momentarily off the ground and expand from one-quarter to one-half inch at its plantar surface when its due proportion of weight is resting upon it. This action not only aids the circulation in a distant part but gives freedom and elasticity to motion. The moment a metal shoe is firmly nailed upon the plantar surface, this freedom of action, as well as the free circulation, is materially interfered with. The horn of the wall, sole and frog, by being artificially protected, and deprived of natural functional activity, loses elasticity, toughness and inherent resisting powers and without any other cause show a disposition to become dry and brittle

and a great tendency to shrink. When this metal plate is made concaved on its upper surface, and worse still, has three elevations from three-quarters to one inch high (called calks), welded to its lower surface, it places the horse practically upon stilts, and throws all his weight upon the wall and deprives the sole and frog of its normal functions. The latter not carrying any weight, raised from the ground and exposed to the drying influence of the air, shrink and become as hard as flint.

In aggravated cases the sole assumes the shape of an arch, the frog atrophies to such an extent that the angles of inflexion at the heels are probably not over one and one-half or two inches apart, where, under normal conditions, the distance between them is three inches or more. The pedal bone, its wings and lateral cartilages, the navicular bone, the broad expansion of the perforans tendons, the bars, the plantar cushion, the velvety membrane of the sole and heels, the sensitive laminae, one or all of these may be encroached upon to a greater or lesser extent, depending upon the severity of the case.

J. B. Coleman, M. R. C. V. S., and David Roeberge, a New York horseshoer, called attention to this condition as far back as 1876. Coleman expanded the heels by nailing an ordinary shoe (weakened at the toe) way back to the buttress and forcibly dilated the shoe with heels firmly attached, by means of a mechanical apparatus especially made for the purpose. He reported extraordinary success, and in addition to having relieved most all of the ordinary abnormal conditions of the foot, it is said that he claimed some success in the treatment of stringhalt and tetanus.

Roeberge also recognized contraction as a frequent cause of obscure lameness, but laid especial stress upon what he called "the unbalanced foot bone." Owing to the lack of proper care of horses' feet, more particularly the young, he attributed most all of the abnormal conditions met with. He insisted upon having a colt's foot made perfectly level and placed at the proper angle in conformity with the pastern and limb, at least once a month, believing that the slightest deviation from a perfect level would disturb the balance of the pedal bone, interfere with the proper action of the coffin joint and unfavorably affect the horn secreting structures, by increasing or decreasing the circulation at certain points. He was a strong advocate of expanding the heels and invented a spring, called the Roeberge hoof expander,

which afforded a rational, most effective and safe method of dilating contracted heels. It consists of a well-tempered steel spring made to fit into the lateral lacunæ of the frog, and when compressed its sharp pointed ends are pressed laterally into the bars at the angles of inflexion at each side, and by constant and moderate tension gradually produce dilatation of the heels.

In the early spring of 1881 I was called to see a number of lame horses at the old Brooklyn Riding Academy. They had been used during the winter in the tanbark-covered ring as school horses only, and had been ridden mainly by ladies and children; my first impression was that most of them were suffering from navicular disease. They all had overgrown feet, badly contracted and boxy heels, and were shod with plain shoes, some of which had not been removed in two or three months.

I selected three of the worst cases and had them sent to their own horseshoeing establishment. Their feet were cut down to the white line uniting wall and sole, soles and bars pared until they yielded to pressure of thumb, lateral lacunæ thoroughly cleaned out to their very bottom, the shrunken remnant of the horny frogs either entirely removed or brought down to a level with the heels, and the plantar surface made absolutely level, and the heels opened up as deep as possible. Strong Roeberge hoof expanders were inserted, and the bottom of the feet well padded with a heavy layer of oakum and tar held in position by a stout piece of sole leather, over which perfectly fitted plain shoes were applied. When the animals were led out on the street they were hardly able to walk, and the manager of the academy telephoned that night that he had sent me three invalids and that I had returned three perfect cripples, hardly able to stand on their feet. I advised him to have patience for a little while, for I expected an improvement in a few days. At the expiration of three days they moved about as well as they had before the operation, and after that they improved from day to day, and in about ten days they moved practically sound. The remainder of the school horses, about twelve in number, were subjected to the same treatment and all did well with the exception of two, which, while much improved, remained lame, and turned out to be confirmed cases of navicular arthritis. In about three weeks we found the heels of most all of the horses overlapping the shoes, and it became necessary to remove and widen them at the heels. In a month or five weeks the animals were reshod, the springs removed, feet leveled, loose flakes of

horn removed from soles, heels opened up a little deeper, but bars and frogs were left practically undisturbed. The springs were replaced and if conditions permitted, were set a little deeper in the heels. In another month, when the animals were reshod a wonderful transformation in the shape of their feet had taken place in most all of them. The heels were wide open, new, strong and well developed bars had formed, base of frogs widened and the soles had returned to their normal conditions. This experiment had made such a favorable impression upon the owner of the riding academy that almost every horse in the establishment, some fifty or more in number, were shod with hoof expanders.

I now bought hoof expanders in large quantities and began to use them in all classes of horses, and continued their use until last year, when I retired from active practice.

Up to about fifteen years ago all horses were shod with iron or steel shoes. Most work horses wore heel and toe calks to give them a foothold on our paved streets, and foot troubles, many of which, in my opinion primarily due to contraction, were speedily relieved by leveling their feet and the judicious application of springs. I firmly believe that many cases of incipient navicular disease were aborted by this method of treatment.

In cases where one heel and quarter were contracted, the bar and sole on the affected side only were thinned down. Of late years I have used the Chadwick springs, for they are a decided improvement over the Roeberge springs, as they are much stronger, come in different sizes and admit of regulations of the amount of pressure desired. A full description and illustration of the Chadwick spring is found in Lungwitz & Adams' excellent work on horseshoeing.

In all cases I found a thick oakum pad well saturated with tar and held in position by a leather sole indispensable.

Since the introduction of the rubber pad, which permits sole and frog pressure and does not interfere with the natural expansion and contraction of the foot, above referred to, foot lame horses are not as plentiful, but horses pulling heavy loads are still shod with calks, and as long as the stereotyped three calked shoe remains in use, contraction of the hoof in its various forms will be met with.

My reason for stating that probably 50 per cent. of all the obscure cases of lameness were located in the foot is based upon the fact that in a large number of instances absolutely nothing abnormal could be detected in the foot, but which gave a posi-

tive reaction to local anesthesia, were frequently relieved by judicious expansion and perfectly level shoeing.

This, to my mind, proves that the slightest degree of inordinate pressure of any part of the keratogenic apparatus upon the sensitive structures within will produce lameness if continued for a sufficient length of time; whether due to contraction, abnormal height of heel, toe or any other part of the plantar surface.

Having already occupied too much of your valuable time, I will not refer to any of the other causes leading to obscure lameness, having in a measure covered the most important one.

STALLION ENROLMENT.*

C. D. MCGILVRAY, Toronto, Canada.

The enrolment of stallions for public service has for its attainment the improvement of horse breeding through a standard of qualification for sires.

To accomplish the desired purpose the enrolment requirements must needs be restrictive in character so as to eliminate from public service stallions of undesirable type and poor conformation. Also to discourage the use of unsound stallions likely to transmit their defects and to prevent the use of stallions other than those of recognized pure breeding.

It would appear that the origin of legislation leading to the enrolment of stallions in Canada was largely due in the first instance to the initiative of Dr. J. G. Rutherford. He introduced in 1893 an act entitled the Horse Breeders Lien Act, which was passed by the Manitoba Legislature, of which he was then a member. The essential feature of this act was that it only gave recognition to pure bred stallions registered in a recognized stud book. In the case, therefore, of a pure bred stallion it provided for a lien registered on his get for a period of one year after their birth, and in the event of the service fee not being paid it entitled the owner of the stallion to seize and sell the colt to liquidate the amount due for service. To avail himself of this privilege the stallion owner was required to record his stallion in the department.

While this act did not provide for compulsory enrolment or an inspection of the stallion, nevertheless it paved the way for future legislation of this nature.

*Paper presented at 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

Further enactments in Manitoba requiring the enrolment of stallions for public service were promulgated from time to time until, during the year 1916, the recent Horse Breeders' Act was made operative. As a basis of operation the act now provides that the owner of any stallion offering for public service in Manitoba shall obtain from the Department of Agriculture annually a certificate of enrolment. Also that every importer or breeder before offering a stallion for sale in Manitoba must enroll such stallion.

Applications for enrolment are required to be accompanied by a bona fide pedigree certificate of registration and certificates of enrolment can be issued only for stallions which are pure bred and registered in an approved stud book recognized by the Canadian National Live Stock Records.

In the case of stallions imported from the United States, not as yet recorded in the Canadian Records, they must be recorded in one of the following associations and have authentic certificates of registration:

For Percheron Horses—Percheron Society of America, Chicago, Ill.

For Clydesdale Horses—American Clydesdale Association, Chicago, Ill.

For Hackney Horses—American Hackney Horse Society, New York, N. Y.

For Belgian Draft Horses—American Register of Belgian Draft Horses, Wabash, Ind.

For Shire Horses—American Shire Horse Stud Book, Wagona, Ill.

For Thoroughbred Horses—American Thoroughbred Stud Book, New York, N. Y.

For Shetland Ponies—American Shetland Pony Stud Book, Lafayette, Ind.

For Welsh Ponies—American Welsh Pony and Cob Stud Book.

For Suffolk Punch Horses—American Suffolk Horse Stud Book, Jamesville, Wis.

For Morgan Horses—American Morgan Register, Middlebury, Vt.

For Saddle Horses—American Saddle Horse Register, Louisville, Ky.

For French Coach Horses—American French Coach Horse Register, or the French Coach Horse Stud Book of America, Chicago, Ill.

For Standard Bred Horses—American Trotting Register, Chicago, Ill.

This provision effectively precludes the enrolment of grade stallions or those of unrecognized breeding.

The act also requires all stallions to be examined by one or more specially authorized veterinary inspectors who are registered members of the Veterinary Association of Manitoba; this places the inspection work in the hands of the veterinary profession. This inspection is necessary for the first enrolment and every three years thereafter, until the stallion is nine years of age. The examination deals with the breed-type, conformation and soundness of the stallion and its desirability as a sire, in accordance therewith. These particulars are embodied in a certified report made by the veterinary inspector and transmitted to the Board of Enrolment for consideration and approval. The board consists of three members, one of which is a veterinarian, the other members representing the Horse Breeders' Association and the Department of Agriculture, respectively. The board carefully consider the inspectors' reports and examine the pedigree certificates of registration and, in turn, recommend to the department their approval for enrolment or otherwise.

The board has the power to reject by withholding their approval of enrolment in the case of stallions considered to be unworthy as to breed-type and conformation and for unsoundness. The decision of the board for enrolment or otherwise is endorsed by them on each report, together with their recommendation as to the form of certificate to be issued by the department.

The following diseases are specially named in the act as being unsoundness of an hereditary nature: Bone Spavin, Ringbone, Navicular Disease, Chorea, Periodic Ophthalmia and Cataract, also Bog Spavin, Thoroughpin, Curb and Sidebone, the latter conditions particularly when accompanied by defective conformation or structural weakness. The omission of Roaring from the list of scheduled diseases is owing to the fact that its hereditary nature is still a disputed question.

With regard to the form of enrolment certificates granted, four schedule forms are provided, designated respectively as Schedule A, B, C, and D, as follows:

Schedule A is made use of for stallions of recognized pure breeding which have been examined and are considered worthy as to breed-type and conformation and found to be free from unsoundness of an hereditary nature, as set forth in the act. This statement is embodied in the enrolment certificate issued.

Schedule B is made use of for stallions of recognized pure breeding which have been examined and considered worthy as to breed-type but found to be affected with one of the forms of unsoundness set forth in the act. Indication of the exact form of unsoundness is embodied in the enrolment certificate issued.

Schedule C is an interim certificate of enrolment, which may be used for stallions of recognized pure breeding and considered to be somewhat unfavorable otherwise, but which are required for temporary service in outlying districts, or until better stallions become available for use in the district.

Schedule D is also an interim certificate of enrolment made use of for stallions of recognized pure breeding, for which application for enrollment have been received, but which are awaiting examination by the inspector. Upon examination being made, and the inspector's report received and considered, certificate of enrolment is issued in the form of Schedule A, B, or C, as the case may require.

When a stallion is rejected for enrolment by the board, and the owner is not satisfied with the decision, provision is made whereby he may protest. In such cases the protest requires to be accompanied by a deposit of thirty-five dollars and a declaration by the owner as to his belief that the stallion in question is entitled to enrolment. These evidences of good faith being furnished by the protestant, entitles an examination of the stallion by an independent arbitration board composed of three experts, one of which is appointed by the department, one by the owner, and the third mutually agreed upon by the two first appointed.

Where the protest is based on a question of unsoundness, the arbitration board requires to be composed of three qualified veterinary surgeons of good repute. Should the decision of the arbitration board be that the stallion in question is entitled to enrolment under the act, the expenses incurred are paid by the department and the deposit money is returned to the owner. If the decision of the arbitration board be otherwise, the expenses incurred are to be paid by the person making the protest out of the thirty-five dollars deposited.

Where its various provisions are complied with, the act entitles the owner of a stallion to file a lien on the foal gotten by such stallion, and, at a fixed time, to seize and sell the foal at

public auction to obtain payment of unpaid fees. The course of procedure in these cases, and the statement of lien, are specifically outlined in this act, thus obviating the incurrence of legal expense.

The act also provides that the owner of any stallion offering for public service in Manitoba shall keep posted, in certain places during the breeding season, a true copy of the certificate of enrolment of such stallion. It is further provided that the owner of an unenroled stallion shall not have route bills or breeding cards printed or posted, nor shall he charge or receive any service fees.

Violations of the essential provisions of the act are punishable by fine on conviction before any two justices of the peace or by a police magistrate.

Coincident with the adoption of advanced legislation, such as the Horse Breeders' Act of Manitoba, undoubtedly many problems naturally appear for solution. While the horse breeding industry is well advanced throughout the older settled districts, there is still a comparative shortage of stallions of good merit in the newly settled districts, a condition to be expected.

To adopt a standard of qualification in breed-type and conformation suitable for all districts in the province is by no means an easy matter. The selection of type in most breeds has heretofore been largely a matter of inclination which varied according to the different fancies of the individual.

As time advances and the number of stallions increases there will naturally follow a wider basis for selection and a more stringent and uniform standard of qualification can ensue. This is important, as no great progress can be made so long as the breeding stock consists of individuals of poor type and defective conformation.

While the present act has only been in operation for a period of two years, it has already eliminated from public service the grade stallion. Material progress is being made on a good foundation, and if consistently maintained beneficial results to the horse breeding industry in Manitoba should be accomplished through the Enrolment and Inspection of Stallions.

Dr. M. V. Spingstun has been transferred from the work of tick eradication, Baton Rouge, La., to such work on the Fort Worth, Texas, force.

THE HOG IN RELATION TO MUNICIPAL GARBAGE.*

C. B. PALMER, Easton, Pennsylvania.

The duty that lies plain is not always the most pleasing. Duty, I take it, is the manner of doing what one should do rather than what he desires to do. Sometimes the two are concordant—more often they are not. In time of war, duty, as an eminent issue, is written large. The love for one's country stands on a level with one's love for his family. Many of us have a tendency to accept the security and benefits of our country without a grave discernment of promise or duty. However, in our present need this obligation is being met.

Veterinarians are as keenly alive to it as others. For the first time the American people, and therefore the allied nations as a whole, are facing a possible occurrence of a serious shortage of food and clothing. The position is understood, but the Government must have men for its burdens overseas, and it must have munitions, clothing and food for its soldiers. To furnish the army and the people at home with the necessary animal products, there must be a greater efficiency; not only in obviating losses from disease but in production, and in my opinion both are functions of the veterinary profession. In his relation to the development and conservation of our live stock industry, the veterinarian occupies a most momentous and unequalled position. The opinion of live stock owners, various legislative bodies, and others, towards the profession, is dependent a great deal upon the veterinarian himself.

I have no thought to-day, gentlemen, of giving you a scientific discourse, but rather to bring to you a thought which I dare say is no new one to many of you, and that is "The Hog in Relation to Municipal Garbage."

Some time ago the United States Department of Agriculture sent out letters to municipal authorities urging them to have their garbage analyzed, as it would convince the most skeptical of the vast amounts of bread, meat and edible fats that found their way to the garbage pail. In fact, it pointed out that annually tons of valuable foodstuffs for animals are lost to the food supply of the nation by the usual garbage reduction and incineration methods. Reduction has been profitable because the American garbage pail is rich in fats, averaging 4 per cent.

* Address before the 55th Annual Meeting, A. V. M. A., Philadelphia, 1918.

before the war, whereas German garbage rarely showed 1 per cent.

As the saving or thrift idea grows, there will be less and less fats thrown away, and this will make reduction of garbage for the recovery of oils hardly worth while. But, even if all fats are eliminated and all waste of bread and cereal and meats is reduced to a minimum, city garbage will still contain, in the form of parings, plate scraps and trimmings, materials which should be conserved and used as feed for hogs and poultry. Approximately fifteen to twenty pounds of garbage are required per day for a fattening hog of 125 to 200 pounds, depending on the character of the garbage. It has been estimated that four tons of garbage are required to grow a pig to 200 pounds, the feeding period extending from ten to twelve months. But as long as people are so careless as to allow such foreign substances as waste paper, tin cans, and broken crockery and glass to get into their garbage, it can never reach its full usefulness. Hogs are not reckoned fastidious, but even they can hardly thrive on a diet which contains broken electric light bulbs and phonograph needles.

In the end it all comes down—as does everything else in war times—to the necessity of widespread individual effort. It is only by such effort that large war problems are to be solved, and the matter of garbage utilization is such a problem, for it concerns the salvage of valuable resources for industry and food which might otherwise be lost.

The first question to be asked from a sanitary point of view is whether garbage-fed pork is fit for human food. The very fact that the United States Department of Agriculture comes out boldly and advocates this feeding method (printing Circular No. 80, entitled, "Disposal of City Garbage by Feeding to Hogs"), hardly makes an explanation necessary. Experts have investigated this subject from many angles, and for many years. They have all come to the same conclusion, that there is no danger to man from this system of hog feeding. In my opinion, hogs do not become diseased primarily because they are fed on garbage, but rather this is due more to the conditions under which they are kept. According to a statement issued by the City of Worcester, during one year 2,276 hogs were sold to a packing company, all being fed entirely on the city garbage. Eleven were condemned by United States meat inspectors. This was less than one-half of 1 per cent.—a loss much less than among

inspected hogs coming to the same packers from farms of the West. We are told by Hon. Gifford Pinchot, at Easton, that the only way to get fats and meat was to raise pigs, feeding them corn. To do that you are simply converting one kind of food into another.

Easton had a few men who saw the real need for more fats and meats, and about this time Dr. Edward Hart, professor of chemistry at Lafayette College, suggested to our Easton Rotary Club that we feed our city garbage to pigs and that they appoint a committee to investigate and report on what could be done. I was fortunate enough to be placed on this committee.

It makes me laugh now to think what the committee had to go through before the proposition was taken up by the city. At our weekly Rotary luncheons our appearance was always an occasion for the members to either hold their noses or grunt like pigs, but I had in mind the old adage, "He laughs best who laughs last." I can say to you to-day we are laughing last and best.

The committee found that the hardest work was to get the city commissioners interested or to think seriously of the project. One of them, who at the start, was very bitter against the city piggery, is now, since he has seen the piggery become systematized, so enthusiastic that he is receiving complaints on account of spending too much time watching the pigs grow. Once convinced, our Council acted promptly. They bought an old wornout farm of 100 acres, three miles from the city, erected temporary pens and began to buy pigs and feed them the city garbage. To the average man this seems to be all that is necessary to raise pigs.

Our city fathers were warned by me not to go and buy pigs, without first being sure that they were healthy and that they came from healthy herds. In spite of this, they went out and bought and placed in the herd already on the farm pigs affected with hog cholera. It was not long before I was called to make a diagnosis, rather a post mortem. The findings proved to be hog cholera. I at once wired Dr. T. E. Munce, acting State Veterinarian, and he promptly sent Pennsylvania State serum by special messenger, and I injected the entire herd, their temperatures ranging from 103° to 107°. It was less than twenty-four hours from the time the diagnosis was made until the serum was in the pigs. The result of this quick action was that we only lost two. I am giving the serum the credit of saving the City of Easton

\$1,062, which was the amount paid for the pigs that were on the farm at the time of the outbreak.

A client, a farmer, who bought pigs at the same time, and from the same farm as the city, lost, from June 2d to June 9th, 3,290 pounds of pig. He did not use serum, nor did he consult a veterinarian until the ninth day after he first noticed symptoms of disease in the herd.

As I said before, the City of Easton bought a wornout farm, and our idea is to raise outdoor pigs. They are utilized in cleaning off the scrub from waste land, and by so doing will improve it. Only the large stumps will remain after a season. About forty pigs to the acre are allowed in each compartment, which compartments are fenced off with four-foot hog wire, with stakes driven in as posts. Arrangements have been made so that the different herds can be driven into the feeding platform in an adjacent compartment and afterwards returned to their own runs. The feeding is done on platforms mounted on skids so as to allow the same to be moved when the ground around the platforms becomes foul. Platforms are shovel-cleaned daily, and the material is utilized on the adjacent farm as fertilizer, being turned under in the furrow. The colony houses are made portable and on skids; knockdown construction. After a suitable time the old ruins and feeding yards are plowed under and seeded down—the pigs having been transferred to fresh ground.

The American Army is turning camp waste into dollars. At many of the camps the officers and men, like the civilian population of the country, have taken a voluntary interest in conservation and the War Department is encouraging it in every way. The camps are annually saving Uncle Sam \$1,500,000 in waste and garbage, increasing the annual output of pork by approximately 20,000,000 pounds, with a market value exceeding \$3,000,000.

Gentlemen, our piggery is only in its infancy, an experiment, if you will. I will feel it a favor if any of you who have had experience in this line will tip us off. I have simply explained our plans, hoping that they might persuade or interest a sufficient number of the members present to go and do likewise, with this thought uppermost—"make the hog help win the war."

Dr. J. R. Love, formerly of the Baton Rouge, La., force, has been called into the service, being commissioned Second Lieutenant and assigned to Camp Lee, Petersburg, Virginia.

FOOD SUPPLY PROBLEMS AND THE VETERINARIAN'S RESPONSIBILITY.*

L. M. STECKEL, New York, N. Y.

We are in the midst of a great world conflict to vindicate the principles of right and justice to all the peoples of the earth, and, therefore, it is our paramount duty to invest our might and main in the accomplishment of this noble mission.

Many factors are immediately concerned in the successful prosecution of this war—men, ammunition, ships, clothing, and food. Of these, the food supply problem has engaged the attention of the entire world. Do you realize what a stupendous task it is to provide an adequate food supply to our forces overseas? But this is not all. Not only must we assure the full provisioning of all our own military forces and the civil population at home, but we are also pledged to share our food resources with our heroic allies, and even give our part to the hungry, breadless neutrals. And, not alone must adequate provision be made for a continuous food supply, but in order to maintain the health and vigor of the people, the food must be sound, safe, wholesome and nutritious.

In a recent agricultural bill before our Congress, an appropriation, as a war measure, having been asked to cover expenses to be incurred in the extermination of prairie dogs and other predatory animals in the West and Southwest, a question was raised by a timid Congressman as to what prairie dogs in Kansas have to do with winning the war in Flanders. Although the humor of a question of this kind is perfectly apparent, I wonder whether you sense the deep and fundamental importance that exists in the connection between prairie dogs in Kansas and winning the war in Flanders. Let me inform you that the live stock losses due to the ravages of these predatory animals are appalling, and we are penalized with the diminution of much needed beef and mutton. In the State of New Mexico alone the annual loss is 34,000 head of cattle and 165,000 sheep. This is equivalent to destroying a dozen sheep on each of fourteen thousand farms.

Perhaps the greatest loss which the agricultural and live stock interests sustain, namely, a total of \$200,000,000 annually,

*Address delivered before the Veterinary Medical Association of New York on October 2, 1918.

is due to the many contagious and infectious diseases. This is a high toll indeed when you consider the reduced food supply entailed thereby. The shortage of fat, wool and leather is assuming serious proportions. We produce annually about one and a half billion dozen eggs, and it is estimated that about one-fifth of this is wasted and spoiled on the farms and on the way to the consumer. The food value of this waste is enormous. Again, our total annual production of dairy and creamery butter amounts to about 1,650,000,000 pounds, which releases about 33,-046,000,000 pounds of skim milk and buttermilk, and we find most of this valuable food is wasted. The food thus lost and wasted would be sufficient to feed the people of Belgium and Serbia for more than a year.

By authority of the United States Food Administration it is stated that since the war began there has been a world decrease in food animals of about 28,000,000 cattle, 55,000,000 sheep and 33,000,000 hogs, and is continuing from day to day. The reduction of food animals involves not alone the supply of meat and dairy products, but also fats, wool, leather, and other by-products. Even after the war the European countries will necessarily be compelled to rely upon us for a long time to furnish them large quantities of animal products, and their depleted herds will have to be replenished as rapidly as possible. It is then our duty to produce food for these peoples.

Of equal importance with food production is the problem of food preservation and conservation. At this time, particularly when our need is so great, it is a flagrant crime to waste an ounce of food or to neglect its preservation and conservation. Salvage must be our watchword. Our military authorities have taken concrete steps to guard against any possible food waste at the camps and cantonments. Through experiments conducted by nutrition experts it was found that the waste of food per man per day could be reduced from over one pound to less than a half-pound. On this basis for an army of two million men the annual savings would amount to over forty million dollars.

Aside from these, there is still another vital question which requires our serious attention. I refer to Child Conservation. Upon the infants and the children of to-day we must depend for the reconstruction and rehabilitation of a world now disorganized and torn by war. Happily, there are a number of unselfish men and women in each community, Child Welfare Committees, working in coöperation with the health authorities

towards the better care of the children in the matter of a proper food supply and the prevention of disease.

What are the responsibilities of the veterinarian in these problems? The veterinarian in his role of animal economist plays an important part in this world drama. His stage and sphere of activity embraces a large and varied repertoire. Whether in the army or civil life, he aids in the protection of the lives of men by guarding against the communicable diseases from animals to humans; he is the guide and advisor to the farmer, the breeder, and army remount staff, and above all he is the expert in the treatment of the sick and wounded of our dumb animals.

The veterinarians are fully aware of their responsibility to the public. It is but too early to forget their indefatigable work in the recent outbreak of "foot and mouth disease" and how completely they banished that scourge from our shores. They have pledged their services in the great crusade for the elimination of tuberculosis from our dairy herds, and they are seriously engaged in the eradication of contagious abortion, anthrax, blackleg, scabies and Texas fever from our cattle, the elimination of glanders, influenza and mange from our horses, the control and reduction of hog cholera and swine plague, and the extermination of pests and infestations among our sheep.

In the field of meat and milk hygiene, the veterinarian is doing his full duty in guarding against the possible release and consumption of unsound meat and dairy products. From the time the animal leaves the farm or ranch to the time the meat is ready for the home or mess kitchen it is under the watchful eye of the veterinary inspector. Up to date, of the millions of tons of meats and meat products supplied to our armies, practically no complaint has been made against the inspection forces, nor have they found any putrid or decomposed meat which came from inspected establishments. What a wonderful comparison with the conditions that existed in the war of 1898. The Federal Bureau of Animal Industry, with its super-efficient organization, deserves special credit for its lead in these epoch-making achievements.

We must, however, exert our efforts still further, and with your permission I shall point out some of the lines along which the veterinarian may render additional aid: He should give his expert services in the matter of increased production of food and food animals, the improvement in the breeding of farm live

stock, the proper care and feeding of our domestic animals, the increased production of fats, wool and leather, to stimulate an interest in dairy sanitation and an increased milk production; he should take a leading part in the health and welfare movements in his community, and, above all, he should give his very careful attention to the cure and treatment of the sick and the eradication of the infectious and contagious diseases among our animals.

I cannot leave without a word of tribute to the Army Veterinary Corps. From a mere handful of men, it was necessary to expand the veterinary service to meet the unprecedented conditions in a war of such magnitude. With patriotic fervor they came forward, from the classroom and field, teacher and practitioner, to join the Army of Liberation. Now, as a Division of our great Army Medical Department, the Veterinary Corps, here and across the sea, is creditably fulfilling its obligation. The good work and efficiency of the men have already called forth high praise from our and the allied army commanders.

And, as the veterinarians in the army service are doing their full share towards the final triumph of winning the war, the veterinarians in civil life, in their many and varied activities, are adding their mite to aid this great cause. Their coöperation with the medical fraternity in the promotion of health and sanitation, and with the agricultural leaders in the development of a bigger and broader agriculture, to the end that a safe and sufficient food supply may be assured the people in this great land, is a worthy contribution to the progress of the World and the welfare of Humanity.

STANDARDIZATION OF BLACKLEG VACCINE.*

LEONARD W. GOSS and JOSEPH P. SCOTT, Kansas Experiment Station.

Horses, when injected with 20 to 120 mil. subcutaneously, or with 50 to 400 mil. intravenously of B. Chauvæi in 5 to 7 doses at intervals of seven days, will produce a serum which has excellent protective properties against blackleg virus. The serum will also effect a cure when injected into cattle in the early stages of the disease.

Tables I and II show a test of the serum from horses 2, 18, 27, 25, 26, 3, 15, 6, 24, 25, 26, and one normal horse. Twenty-five mil.

*Paper presented at 55th Annual Meeting, A. M. V. A., Philadelphia, 1918.

of blood was drawn from the jugular vein of each horse nine days after an injection of culture of *B. Chauvæi*. After the clot had formed it was pressed to one side with a needle and .55 mil. of the clear serum was withdrawn and injected into each of the three guinea pigs. Fifteen hours later each of the guinea pigs was given 125 mg. of powdered muscle from a blackleg lesion of a calf. In all cases when none of the three guinea pigs died within two days, the horse was bled upon the third day after the test blood was drawn. This was the case with horses 27, 25, 26, 3, 6, 25 and 26, while horses 2, 18, 15, 24 and the normal were not bled.

The 125 mg. of muscle is about 50 mld. as the mld. of the muscle powder used was 2.5 mg. This shows that .55 mil. of the horse serum will protect a guinea pig against blackleg when injected with about 50 mld. of virus, administered fifteen hours following the serum. It is shown in Table II that the serum from a normal horse failed to protect any of the three guinea pigs for even one day.

Table III is a test of serum 36. This serum contains the serum taken from seven horses which have passed according to Tables I and II. Three guinea pigs were each given .05 mil. of the serum and fifteen hours later they were each given .5 mil. of culture virus. All three of these guinea pigs lived. Three guinea pigs were given .02 mil. of serum and fifteen hours later they were each given .5 mil. of culture virus. But one of these pigs lived. The other two died upon the second day. Three guinea pigs were given .01 mil. of serum and fifteen hours later they were given .5 mil. of culture virus. One of these died upon the first day and two upon the second. One guinea pig which did not receive serum was given .05 mil. of virus and one was given .1 mil. of virus. Each one of these guinea pigs died upon the second day. This shows that .05 mil. of this virus is sufficient to kill an unprotected guinea pig. As .05 mil. of virus will kill a normal guinea pig and .05 mil. of immune serum will protect a guinea pig against .5 mil. of virus, it would seem to indicate that immune serum in quantities of .55 mil. will protect guinea pigs against 110 mld. of culture virus.

In Tables I and II it shows that .55 mil. of immune horse serum will protect against 50 mld. of muscle virus at the time when the animal is test bled. Table III would seem to indicate that the blood upon the day of bleeding was much more potent than upon the day of testing. However, there may be some difference in the reaction between the muscle virus and the pure

culture virus, as the muscle virus undoubtedly contains other organisms besides blackleg. The high protective properties of serum, in the guinea pig, against the blackleg virus will account for the curative properties of serum when used upon cattle during the early stages of blackleg infection.

A part of the aggressins and filtrates used in the following tests were purchased in the open market and in testing they have been used indiscriminately. The results are shown in Tables IV, V, VII and VIII.

Table V shows that 24 guinea pigs were used in testing three filtrates, eight pigs to each filtrate. They were given doses from 2 to 5 mil. Eleven days following they were each given 5 mld. of culture virus. This table shows that 50 per cent of the guinea pigs in the entire test died of blackleg. Of the pigs receiving 2 mil. 33 per cent were protected; of those receiving 3 mil. 50 per cent were protected; of those receiving 4 mil. 50 per cent; of those receiving 5 mil. 66 per cent. This would indicate that the 5 mil. of filtrate gives a little more protection than 2, 3 or 4 mil.

Table IV shows that 24 guinea pigs were used in testing three aggressins. Eight guinea pigs were used upon each aggressin, two of which were given 2 mil., two were given 3 mil., two were given 4 mil., and two were given 5 mil. Eleven days afterward they were each given 5 mld. of virus. Of the entire number of pigs receiving 2 mil. 33 per cent were protected; of those receiving 3 mil. 66 per cent were protected; of those receiving 4 mil. 50 per cent; and of those receiving 5 mil. 50 per cent. On the whole, 50 per cent of the guinea pigs were protected. This table would seem to indicate that 3 mil. gave more protection than any of the other size doses.

To summarize the results shown in Tables IV and V, of the 24 guinea pigs with which aggressins were tested, 50 per cent died; also of the 24 guinea pigs with which filtrates were tested, 50 per cent died. As a means of testing or standardizing aggressins and filtrates it would seem that this method is not very efficient, as there is so little difference in the protective properties of 3 and 5 mil. that it would make it difficult to detect the variation of the different products which were tested by this method. It would seem in some instances one product might have twice the protective properties of another and still show a smaller degree of protection upon this test. It will be noticed that these guinea pigs have received from $1/5$ to $5/5$ of a dose of vaccine required to protect cattle and that 5 mld. of virus have killed

50 per cent. This would seem to indicate that the highest degree of active immunity developed in the guinea pig is of a rather low degree. On that account it probably is possible to produce nearly as much immunity in a guinea pig with 3 mil. as with 5 mil. of aggressin or filtrate. The volume of the dose of all concentrated vaccines was brought up to 5 mil. by the addition of sterile water.

The material used in Table VI was a pure culture of *B. Chauvæi* which was washed by centrifuging three times, then sufficient water was added to bring the material up to the original volume. This shows that the guinea pigs receiving .1, .2, .4 and .8 mil. lived, while the guinea pig receiving 1.6 mil. of washed culture died; and the guinea pig receiving .05 mil. of the unwashed culture died. Accordingly, it takes 31 times as much of the washed culture to kill a guinea pig as of the unwashed culture, which would indicate that the culture contains a toxic or aggressive substance and that, through washing, the greater portion of this toxic or aggressive substance has been removed.

Table VII shows a test of five products—A, B, C, D and E—part of which are aggressins and part filtrates. In these tests all guinea pigs were injected with 1 mil. of normal horse serum. Five guinea pigs were used upon each product. To each one of the guinea pigs, on the following day after having received the 1 mil. of normal horse serum, was given 1 mld., of virus and 1, 2, 3, 4 and 5 mil., respectively, of aggressin. Of the five guinea pigs given A those receiving 4 and 5 mil. died; of the guinea pigs given B, the one receiving 4 mil. died; of the guinea pigs given C, the one receiving 4 mil. died; of the guinea pigs given D, the one receiving 4 and 5 mil. died; of the guinea pigs given E, those receiving 2, 3, 4 and 5 mil. died. In this test, the guinea pigs receiving the larger doses died; this would indicate that there was an aggressive action in these products which has a neutralizing action upon the serum. Thus the serum is not able to protect the guinea pig against the virus given. If this is the case, an aggressin which contains a large amount of aggressive substance will kill the guinea pigs. On the tests A, B, C, D and E the conclusion is that E should be a more efficient product for immunizing than any of the others.

Table VIII shows a potency test of the serum of a normal horse. In this test it is noted that .5 mil. of the serum when injected into guinea pigs protected those which had received .1, .2, .4, .6, .8 and 1. mil. of culture virus injected fifteen hours after the serum was injected. This shows that .5 mil. of normal horse

serum will protect against 1. mil. of virus, which is equal to 10 mld.

Accordingly, 1. mil. of normal horse serum should protect against 20 mld. of culture virus.

Referring to Table VII it will be seen that the guinea pig which received 1 mil. of normal horse serum and 1 mld. of virus and 2 mil. of the aggressive product E, died. According to Table VIII, 1 mil. of normal horse serum protects a guinea pig against 20 mld. Therefore, the mld. value of 2 mil. of E would be 20 less than the 1 mld. of culture virus injected at the same time, or 19 mld. Accordingly, 5 mil., or a calf dose, would contain 2.5 times as much, or 47.5 mld., which would be the aggressive value of E. C seems to have the least action, as 5 mil. was of sufficient strength to kill a guinea pig; therefore, it would have a value of 19 mld. The old powder vaccine on the market has a value of about 1 mld. to each dose; therefore, the aggressive products in Table VII should be from 19 to 47.5 times as aggressive as the powder vaccines.

CONCLUSIONS.

1. Serum can be made from the horse, by injecting cultures of B. Chauvæi, which will protect guinea pigs from blackleg, when they are injected with 0.5 mil. of culture virus (10 mld.) if they receive .02 mil. of the serum fifteen hours previous to the injection of virus.

2. Aggressins and filtrates in quantities of 2-5 mil. will produce an active immunity in eleven days, which will only protect 50 per cent of the guinea pigs when given 5 mld. of culture virus.

3. A normal horse produced a serum which was capable of protecting guinea pigs against 10 mld. of culture virus when injected with .5 mil. of the serum fifteen hours previous to the injection of the virus.

4. The pathogenic properties of B. Chauvæi cultures are greatly reduced by washing.

5. Blackleg aggressins and filtrates have an aggressive action which seems to neutralize the protective action of serum.

GENERAL CONCLUSIONS.

The laboratory standardization of anti-blackleg serum is a comparatively simple procedure. On the other hand, the standardization of aggressin and filtrate is somewhat more difficult, as

the highest active immunity which can be produced in guinea pigs is of a low degree. However, the neutralization of the serum by the aggressin or filtrate seems to give a method by which the value of the product may be measured.

TABLE I.

TEST OF HORSES FOR IMMUNE SERUM.								
Horse No.	Guinea Pig		Serum Injected		Muscle Virus Injected		Results	
	No.	Weight, Grams.	Amount, Mil.	Date	Amount Mg.	Date	First Day	Second Day
2	414	500	.55	9/17	125	9/18	3X	Dead
	415	500	"	"	"	"	2X	2X
	416	470	"	"	"	"	2X	2X
18	417	500	"	"	"	"	Dead	
	418	300	"	"	"	"	2X	2X
	419	450	"	"	"	"	2X	2X
27	420	360	"	"	"	"	2X	2X
	421	300	"	"	"	"	2X	2X
	422	560	"	"	"	"	2X	2X
25	484	270	"	9/24	"	9/25	2X	2X
	495	360	"	"	"	"	2X	2X
	496	250	"	"	"	"	2X	2X
26	497	250	"	"	"	"	2X	2X
	498	250	"	"	"	"	2X	2X
	499	300	"	"	"	"	2X	2X
3	483	560	"	"	"	"	2X	2X
	494	250	"	"	"	"	2X	2X
	485	250	"	"	"	"	2X	2X
15	486	350	"	"	"	"	2X	2X
	487	250	"	"	"	"	2X	2X
	488	250	"	"	"	"	2X	Dead

1X, 2X and 3X indicate the degree of the lesion.

TABLE II.

TEST OF HORSES FOR IMMUNE SÉRUM.								
Horse No.	Guinea Pig		Serum Injected		Muscle Virus Injected		Results	
	No.	Weight, Grams.	Amount, Mil.	Date	Amount Mg.	Date	First Day	Second Day
6	619	300	.55	10/22	125	10/23	2X	2X
	620	330	"	"	"	"	2X	2X
	621	360	"	"	"	"	2X	2X
24	622	420	"	"	"	"	3X	3X
	623	400	"	"	"	"	3X	2X
	624	300	"	"	"	"	3X	Dead
25	625	240	"	"	"	"	2X	2X
	626	300	"	"	"	"	2X	2X
	627	270	"	"	"	"	2X	2X
26	628	300	"	"	"	"	2X	2X
	629	360	"	"	"	"	2X	2X
	630	330	"	"	"	"	3X	2X
*	655	270	"	10/29	"	10/30	Dead	
	656	270	"	"	"	"	Dead	
	657	270	"	"	"	"	Dead	

*Normal.

TABLE III.

POTENCY TEST OF BLACKLEG SERUM.							
Guinea Pig		Serum Injected		Culture Virus Injected		Results	
No.	Weight, Grams.	Amount, Mil.	Date	Amount, Mil.	Date	First Day	Second Day
60	300	.05	2/14	.5	2/15	OK	OK
61	360	"	"	"	"	OK	OK
62	420	"	"	"	"	OK	OK
63	330	.02	"	"	"	1X	OK
64	330	"	"	"	"	3X	Dead
65	300	"	"	"	"	3X	Dead
66	390	.01	"	"	"	Dead	
67	390	"	"	"	"	OK	Dead
68	330	"	"	"	"	3X	Dead
75	240			.05	2/15	1X	Dead
76	270			.1	"	1X	Dead

TABLE IV.

POTENCY TEST WITH AGGRESSINS.

AGGRESSIN A.

Guinea Pig		Aggressins Injected		Virus Injected		Results
No.	Weight, Grams.	Amount, Mil.	Date	Amount, Mil.	Date	
313	720	2	4/9	5	4/20	OK
314	360	2	"	"	"	Dead
315	390	2	"	"	"	OK
316	390	"	"	"	"	OK
317	360	4	"	"	"	Dead
318	360	2	"	"	"	Dead
319	390	5	"	"	"	OK
320	360	"	"	"	"	Dead

AGGRESSIN B.

363	360	2	4/16	5	4/27	Dead
364	360	"	"	"	"	Dead
365	300	3	"	"	"	OK
366	360	"	"	"	"	Dead
367	360	4	"	"	"	OK
368	270	"	"	"	"	Dead
369	240	5	"	"	"	OK
378	360	"	"	"	"	OK

AGGRESSIN C.

370	300	2	4/16	5	4/27	OK
371	300	"	"	"	"	Dead
372	270	3	"	"	"	OK
373	270	"	"	"	"	Dead
374	240	4	"	"	"	OK
375	240	"	"	"	"	OK
376	300	5	"	"	"	Dead
377	360	"	"	"	"	Dead

TABLE V.

ACTIVE IMMUNIZATION WITH FILTRATES.						
A						
Guinea Pig		Filtrate Injected		Virus Injected		Results
No.	Weight, Grams.	Amount, Ml.	Date	Amount, Mld.	Date	
305	360	2	4/9	5	4/20	Dead
306	270	"	"	"	"	Dead
307	390	"	"	"	"	OK
308	360	"	"	"	"	OK
309	330	4	"	"	"	OK
310	510	"	"	"	"	Dead
311	330	5	"	"	"	Dead
312	360	"	"	"	"	OK
B						
347	300	2	4/16	5	4/27	OK
348	360	"	"	"	"	Dead
349	270	3	"	"	"	Dead
350	330	"	"	"	"	Dead
351	300	4	"	"	"	Dead
352	330	"	"	"	"	OK
353	270	5	"	"	"	OK
354	240	"	"	"	"	Dead
C						
355	360	2	"	"	"	Dead
356	360	"	"	"	"	OK
357	300	3	"	"	"	OK
358	300	"	"	"	"	OK
359	240	4	"	"	"	OK
360	270	"	"	"	"	Dead
361	270	5	"	"	"	OK
362	360	"	"	"	"	OK

TABLE VI.

TEST SHOWING THE MLD. OF WASHED AND UNWASHED CULTURE VIRUS.						
WASHED.						
Guinea Pig		Culture Virus Injected			Results	
No.	Weight, Grams.	Amount, Mld.	Date	First Day	Second Day	
69	360	.1	2/15	OK	OK	
70	300	.2	"	OK	OK	
71	390	.4	"	OK	OK	
72	450	.8	"	OK	OK	
73	210	1.6	"	OK	OK	Dead
UNWASHED.						
74	240	.05	"	2X		Dead

TABLE VII.

TEST SHOWING THE AGGRESSIVE ACTION OF
AGGRESSIN AND FILTRATE.

A

Guinea Pig		Normal Serum Injected		Virus and Agg. or Filt. Injected			Results	
				Virus	Agg. or Filt.			
No.	Weight, Grams.	Amount, Mil.	Date	Amount, Mld.	Amount, Mil.	Date	First Day	Second Day
494	390	1	5/20	1	1	5/21	OK	OK
495	450	"	"	"	2	"	OK	OK
496	480	"	"	"	3	"	OK	OK
497	360	"	"	"	4	"	OK	Dead
498	480	"	"	"	5	"	3X	Dead

B

509	330	"	5/27	"	1	5/28	OK	OK
510	330	"	"	"	"	"	OK	OK
511	360	"	"	"	"	"	OK	OK
512	240	"	"	"	"	"	OK	Dead
513	390	"	"	"	"	"	OK	OK

C

514	330	"	"	"	1	"	OK	OK
515	240	"	"	"	"	"	OK	OK
516	360	"	"	"	"	"	OK	OK
517	270	"	"	"	4	"	1/2 X	Dead
518	270	"	"	"	5	"	OK	OK

D

569	200	"	6/12	"	1	6/13	OK	OK
570	300	"	"	"	"	"	OK	OK
571	300	"	"	"	"	"	OK	OK
572	300	"	"	"	4	"	Dead	
573	200	"	"	"	5	"	Dead	

E

574	200	"	"	"	1	"	OK	OK
575	300	"	"	"	"	"	Dead	
576	250	"	"	"	"	"	Dead	
577	200	"	"	"	4	"	Dead	
578	325	"	"	"	5	"	Dead	

TABLE VIII.

POTENCY TEST OF THE SERUM OF A NORMAL HORSE.

Horse	Guinea Pig		Serum Injected		Virus Injected		Results	
	No.	Weight, Grams.	Amount, Mil.	Date	Amount, Mil.	Date	First Day	Second Day
Normal	776	325	.5	7/25	.1	7/26	OK	OK
	777	375	"	"	.2	"	1X	OK
	778	375	"	"	.4	"	OK	OK
	779	300	"	"	.6	"	OK	OK
	780	300	"	"	.8	"	1X	OK
	794	275	"	7/27	1.0	7/28	3X	3X
	795	300	"	"	1.25	"	3X	Dead
	796	300	"	"	1.5	"	2X	2X

OBSERVATIONS ON THE USE OF BIOLOGICAL PRODUCTS.*

DR. C. E. SALSBERY.

We sometimes wonder that veterinarians do not become weary, listening to papers and discussions on biological products, especially when presented and agitated by commercial houses. At the same time, so many inquiries are received regarding the use, efficiency and application of these products that it seems they do not remember what has been so often repeated or else they do not attend meetings where these subjects are presented.

Let it be understood that the points presented in this paper are entirely from correspondence and reports on file from veterinarians in practice and not from personal observation. We may have our own ideas regarding the theoretical application of biological products based on the scientific investigations of competent men, both in the laboratory and in the field, and whatever personal suggestions or ideas are incorporated in this article should be considered as only supplementary and as suggestions in connection with the observations obtained by studying field reports.

SWINE PLAGUE.

Perhaps no other season has seen a more careful study and distinction in diagnosis between hog cholera and swine plague than this one. So many letters and reports have been received from the field this year that we are convinced veterinarians are giving the post-vaccination trouble much more consideration than in previous years. Formerly it was considered bad serum or bad virus when, following vaccination, the hogs continued to die. Large quantities of serum were furnished gratis for revaccination and, while in some cases the loss was apparently checked, in many others no beneficial results were obtained.

Veterinarians would condemn the serum of one company and begin using that of another, but it is a question whether the change was not merely a psychological factor rather than an actual improvement.

There is considerable controversy as to the possibility of differentiating hog cholera and swine plague. That there is a

*Presented at the Missouri Valley Veterinary Association meeting in Omaha, July 16, 1918.

difference cannot be doubted. The two diseases may occur simultaneously in the same animal, in which case it is quite impossible to draw the line of differentiation, but it has been proven time after time that serum and virus will not eliminate the losses of animals infected with swine plague.

In summing up the variety of conditions described, from a long list of correspondence, we find the following: Pigs are unthrifty, more or less inactive, have a tendency to snuffle, hacking cough which becomes intensified as soon as the animal is forced to run, appetite very good, drink lots of water and live from a few days to two weeks. On autopsy they find a variety of conditions, some catarrhal pneumonia, others necrotic pneumonia with isolated and frequently encapsulated abscesses involving the greater portion of one lung and in many cases thickening of the intestinal wall, accumulation of cheesy exudate upon the mucous membrane, may or may not be hemorrhages in the kidneys, frequently some congestion in the lymphatics, quite frequently coagulated pleural exudate with adhesions, etc.

Upon laboratory examination of many specimens we have found all manner of infective organisms, particularly connected with the lesions described. We hardly ever fail to isolate some strains of staphylococci, *B. coli* and invariably the *B. septicus*, the latter always being identified by rabbit inoculation, microscopical and cultural technique, occasionally streptococci and *suipestifer*, rarely *B. necrophorus* are found.

There is no doubt that these mixed infections occur in conjunction with hog cholera and while the administration of serum and virus controls the cholera it has no effect whatever upon the other infections.

The reports upon the use of mixed infection vaccine for swine in connection with serum and virus, or in herds where the serum and virus failed to check the losses, have been so conclusive that to us it is no longer a matter of experimentation, but a fact that mixed infection vaccine for swine is a reliable treatment. There has been considerable controversy as to the benefits derived from a vaccine incorporating the *B. necrophorus*. At the present time the Department does not sanction its use, but there appears to be considerable field evidence that a vaccine containing the *necrophorus bacillus* is much more efficient in mixed infections where the *necrophorus bacillus* is present than a vaccine without it. At a recent meeting in the State of Illinois this question was thoroughly discussed and the reports of very

reliable men, who have had experience with the two vaccines, seem to warrant the incorporation of the *B. necrophorus* to get the best universal results.

At this writing, however, the U. S. Bureau of Animal Industry controlling the manufacture of biological products positively forbids offering for interstate shipment a bacterin or vaccine for swine containing *B. necrophorus* and the popular impression among some practitioners that there is a bacterial vaccine on the market for *necrophorus* infection should be corrected.

HEMORRHAGIC SEPTICEMIA — CATTLE AND SHEEP.

There is probably no other infectious disease in cattle and sheep, of recent years, which spread so rapidly and caused as great losses as hemorrhagic septicemia. At the same time, there is probably no immunizing product that has been so quickly developed and with such decidedly successful results as hemorrhagic septicemia vaccine.

One very interesting circumstance in connection with this disease is that a vaccine may be prepared by using virulent strains of organisms isolated from animals of different species. A vaccine containing *B. bovissepticus*, *B. ovisepticus*, *B. suissepticus*, *B. avisepticus*, may be successfully used in checking an outbreak in any of the species susceptible to the disease. However, the most favorable results obtained are in those instances in which the animals are immunized with vaccines prepared from organisms isolated from the same species; for instance, we would not recommend that the organism isolated from swine should be used in preparing a product for the immunization of cattle, or vice versa.

In the preparation of this product the writer feels that the most favorable results are obtained by preparing a polyvalent vaccine—that is, the strains are isolated from various sources—and also by the constant renewal of the cultures used by isolating the organisms from recent outbreaks.

There is, however, one great question which enters into the results in the use of hemorrhagic septicemia vaccine, and that is a differentiation between hemorrhagic septicemia and corn stalk disease. From personal observation we are unprepared to make a statement. It seems quite evident, however, from reports, that there must be a difference in the causative factor of these two conditions.

Some investigators have shown that in some instances which have been called corn stalk disease, the causative factor was *B. botulinus*, or forage poisoning.

One typical report on the use of hemorrhagic septicemia vaccine is as follows:

The owner of a large herd, after harvesting the corn, turned the animals into the stalk fields. In a very short time several animals died. A veterinarian was called and diagnosed the condition as hemorrhagic septicemia, which was confirmed by laboratory diagnosis. They were vaccinated and kept away from the stalks for five days, when they were returned and allowed to remain until the field had been cleaned up, without any further losses.

This goes to show that the animals should be kept from the source of infection until such a degree of immunity is developed that they can withstand a re-infection at a later period. Therefore, it is quite evident that this precaution should be observed in order to obtain the best results.

We have a number of reports on file of a similar nature, indicating that animals that die in stalk fields are not always protected by the use of hemorrhagic septicemia vaccine. On the other hand, many reports are received where losses were checked, under similar conditions, indicating that not all animals that die in stalk fields die of corn stalk disease. It is evident, therefore, that veterinarians must use considerable precaution in fixing a diagnosis and it is quite essential that in many cases laboratory assistance should be considered. There is no question that properly prepared hemorrhagic septicemia vaccine will protect animals against hemorrhagic septicemia infection.

INFLUENZA.

One of the very common infectious diseases of horses and mules that gives considerable trouble is influenza. Much time and energy have been spent in research as to the real cause of this disease without determining absolutely the definite factors. There is not any doubt that the exciting factor of influenza is a filterable virus, but we believe there is seldom, if ever, a case seen in which this virus is the solitary factor in the infection. Secondary infections of *B. equisepticus*, staphylococci, streptococci, pneumococci, *B. coli* and perhaps others, are always present in varying combinations. It is not possible to prepare a vaccine incorporating the filterable virus and any anti-influenza vaccine

may be efficient only to the degree that the secondary organisms it contains will immunize against the secondary infection.

In a great many cases the result of the secondary infection is much more serious than if the filtrable virus alone were present and the reports from the use of anti-influenza vaccine are so variable that it is impossible to classify it as a specific immunizing agent, as compared to hemorrhagic septicemia vaccine, blackleg vaccine or others of a similar character. At the same time many of the reports we receive taken by themselves would convince anyone that anti-influenza vaccine is an absolutely reliable immunizing agent. There are on file many reports which show that the use of this vaccine in these cases gave positive immunizing results in exposed animals.

In other cases there are reports on file where the results were considered only favorable in view of the fact that not all of the animals vaccinated and exposed became infected; those that were sick recovered promptly after a mild attack. In another class of reports, noticeably in the minority, it appears that vaccination was not followed with good results in that apparently no protection was given, or else it was only slight. It is therefore plainly evident that the large number of reports received must necessarily present a wide variation of results. To give an explanation of this condition is another proposition.

There are many circumstances which enter into the process, such as variation in virulence, time of vaccination with respect to the time of exposure, size of the dose, climatic conditions, etc., that it is next to impossible to give an explanation for the variation in these results. In spite of this relative degree of uncertainty we are not justified in condemning the use of anti-influenza vaccine, because a large percentage of the reports received indicate its unquestionable beneficial effect. The only advice that can be given is that the veterinarian must consider carefully all of the circumstances that are connected with the condition and use his best judgment in the application of the treatment. The use of anti-influenza serum combined with vaccine has given good results in infected cases.

BLACKLEG.

At the last meeting of the Nebraska State Veterinary Association we presented quite a thorough resumé of the various new and efficient blackleg immunizing products. Since that time the reports received on the use of these products has not varied

sufficiently to warrant a prolonged discussion, but the product known as "Aggressin" seems to be gaining a wider field of use than ever before. That it is a highly efficient and reliable product there is no doubt. In addition to this, being germ-free, eliminating any possibility of causing blackleg, is a decidedly favorable factor in its use. So far as giving permanent immunity is concerned, it is very difficult to say whether the aggressin alone is responsible for the prolonged immunity or whether the susceptible age of the animal does not also enter into the process.

Blackleg filtrate, a similar product, only prepared under artificial conditions, appears to have some following and no doubt gives fair results. The difficulty in the preparation of the filtrate is to handle it in such a manner that there will be a maximum amount of toxin with a minimum deterioration of the toxin. The toxin of the blackleg bacillus is very sensitive to light and air, and this, we believe, is one reason for unsatisfactory results that occasionally follow the use of the filtrate. Scientifically, the product should be a good one, because whether produced artificially or in the animal body this toxin should have the same immunizing properties, under similar conditions, but the field results with natural aggressin seem more dependable.

In the liquid blackleg vaccine we have now reached a point where the attenuation of the blackleg spore is positively fixed and the danger of causing disease has been eliminated. The reports on its use in a large number of animals treated during the past nine or ten months absolutely substantiate this statement. Its efficiency in the field appears to be equal to either the aggressin or the filtrate, and it is a question whether the injection of a known enormous number of attenuated spores does not produce even a more fixed immunity than the injection of a more or less uncertain amount of the toxin. At any rate, the day of the pill and powder form of vaccination is passing. Naturally, there will be some demand for these products, but their elimination in the field is bound to come.

BOVINE ABORTION.

In spite of the negative results reported by such men as Dr. Williams, Dr. Cotton, and others, there is still sufficient evidence that the use of abortion bacterin in cattle has been successful in the field. We have encouraged the report of unsuccessful cases by offering to refund the price on any treatment that failed to prevent the disease if the vaccination had been

carried out according to directions. We are willing to concede all the credit for their ability and experience to Drs. Williams and Cotton, and others, but we must say that the reports which we have received certainly do not substantiate their statements. It is not claimed that the treatment is 100% perfect; we doubt if any treatment is, but the percentage of successful treatments from our reports is sufficiently high to warrant the statement that the treatment with bovine abortion vaccine is successful.

Our offer to refund on unsuccessful treatments, we believe, has stimulated veterinarians to report such cases, and if that is true, then the number of successful treatments is well over 90%, and when this is compared with the losses occurring where the treatment has never been used, it is certainly worth while.

ABORTION IN MARES.

To most veterinarians this disease is new, especially as an infection. Very extensive experimentation was carried on in the State of Kentucky, and the causative factor was isolated and identified thoroughly and probably belongs to the *B. coli* group. Experimental results in the use of a vaccine prepared from pure cultures of this organism in various strains have been very successful; in fact, an article occurred in one of the periodicals a short time ago on similar experiments carried on in a new field and the results were so favorable that the treatment was recommended as a successful means of preventing abortion in mares. In our own records we have reports very much the same, one in particular received from a veterinarian in the southwestern part of Kansas, where a breeder of fine animals had suffered such losses during the past few years that he was about to discontinue the raising of horses. We received material from one of these cases for examination and suggested the possibility of infectious abortion and recommended a treatment. The results were so satisfactory that the owner of these animals has decided to go into the breeding industry more extensively and, as he says, "without any more fear of losing colts."

As was stated at the beginning of this article, the fundamentals in this discussion are based upon actual correspondence and reports from veterinarians in the field and not from personal observation. We have included a few personal ideas and we trust that discussion of the paper will bring forth the opinion and experience of others present.

CLINICAL AND CASE REPORTS.

A NOTE ON THE EFFECT OF COLD ON THE DEGREE OF PARASITIC INFESTATION.

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Research Laboratory of Parke, Davis & Co., Detroit, Michigan.

In our anthelmintic investigations connected throughout the winter of 1916 and up through January, 1918, about 300 Detroit city pound dogs, which were fairly representative of almost all breeds of dogs, except the toy varieties, were used. During this period suitable infested animals for anthelmintic treatment were readily obtainable, for a very large percentage of the dogs were infested with internal parasites.

Of close to 400 dogs that were examined, about 100, or 25 per cent, were rejected for experimental purposes on the strength of a negative fecal examination, which does not, however, prove that they were not infested with intestinal parasites. There may be worms present in spite of the absence of ova in the feces, for the worms might be all males, or the females might be immature, or so few in number that egg production is very limited, and hence undetected, or egg production might be inhibited by several factors. Dogs which show negative fecal findings on examination, when examined postmortem, are found to be infested. Of the 300 dogs examined postmortem, 271, or 93 per cent, were found infested with intestinal parasites. Thus, 271 dogs out of 400, or about 68 per cent of the Detroit dogs examined, were surely infested, and since some of the 100 dogs that were rejected would be found on postmortem examination to be infested, it can safely be asserted that more than seven out of ten Detroit dogs, under normal conditions, are infested with intestinal parasites.

Detroit dogs are infested with two species of ascarids, *Belascaris marginata* and *Toxascaris limbata*. Of the two species, *Belascaris marginata* was apparently the commoner one met with in our first series of 300 dogs. Of our first 67 infested, 47, or 70 per cent, were infested with ascarids, and, according to Hall (1917), all that were examined proved to be *Belascaris marginata*.

Of the 271 in the series of 300 infested, 144, or 53 per cent, were infested with ascarids, a large number of which proved to be *T. limbata*.

Next to the ascarids in the frequency of nematode infestations are the whipworm, *Trichuris depressiuscula*, which occurred in 111 of our 271 infested dogs, or in 41 per cent, and the hookworm, *Ancylostoma caninum*, which occurred in 89 of our 271 infested dogs, or in 33 per cent.

Thus, with 53 per cent of our Detroit dogs infested with ascarids, 41 per cent with whips, and 33 per cent with hookworms, very suitable material for anthelmintic investigations was always at hand. During the last few months, however—that is, during the latter part of February, March, April and May, 1918—approximately 50 out of 60 dogs examined showed negative fecal examinations with an almost total absence of hookworm infestation. Furthermore, the species of ascarid met with was not the expected common *B. marginata*, but the rarer of the two ascarid species, *T. limbata*. This marked falling off of parasitic infestation, as evidenced by negative fecal examinations, which is not, as has been stated before, entirely conclusive evidence of the absence of intestinal parasitism, is apparently due to the unusually prolonged, severe winter experienced this last year (1917-1918). It has been known that cold will retard the development of parasitic ova, and Stiles (1908) in regard to the effect of temperature on the hookworm eggs of man says: "Cold retards and heat hastens the development of the eggs and embryos; a freezing temperature of 24 to 48 hours' duration, it is said, kills both eggs and embryos." During this past winter, when the thermometers about Detroit registered as low as -20° and remained around zero for several days, the opportunity for development of most parasitic ova was reduced to a minimum.

The greater frequency of *T. limbata* in our dogs is apparently due to the greater resistance of its ova to extreme temperatures. The ova of *T. limbata* are provided with a double-contoured chitinous shell and an inner coat marked with interlacing striations suggesting fibres, which apparently affords the egg great protection against low temperatures. I have obtained embryo development in the ova of *T. limbata* in 35 days at a temperature of 10°C . At room temperatures $21-33^{\circ}\text{C}$, embryo development was noted in 2 to 3 days. Thus, temperatures as low as 10°C merely tend to retard the development of the ova of *T. limbata*. Ova, such as those of *B. marginata* and *Ancylostoma caninum*,

which have no such highly developed shell, are undoubtedly unable to withstand the vicissitudes of low temperatures for any length of time.

It is interesting to note the results of the frequencies of parasitic infestations of dogs in regions south of Detroit, where warmer climate would evidently promote the development of parasitic ova, and hence the degree of parasitic infestation.

Hall (1917) found that of 76 infested dogs examined at Washington, D. C., 67 per cent of the dogs had ascarids, 57 per cent had whipworms, and 71 per cent had hookworms.

Wharton (1917) found 97.45 per cent of the 118 dogs examined in the Philippine Islands infested with intestinal parasites. Only 6.77 per cent of the dogs were infested with *T. limbata*, which is surprisingly low. Wharton states in regard to their small numbers: "The percentage of infestations with this form was much lower than I had expected to find it, and the number of worms present in each case was very small. The fact that the majority of the dogs examined were full grown may account for the small per cent shown. A veterinary surgeon informs me that this parasite is very frequently found in puppies here in Manila, while they are only rarely encountered in older dogs." Ninety-six per cent of his dogs were infested with hookworm, while there is no record of any whipworm infestation.

A comparison of the figures for 271 infested Detroit dogs, with 76 (Hall) and 48 (Sommer) infested Washington dogs and with 115 (Wharton) infested Philippine dogs shows that worm infestations are more numerous, as might be expected, in warmer climates. Hall finds a greater percentage (57 per cent) of the dogs at Washington, while Sommer finds a lower percentage (28 per cent) of the dogs at Washington to be infested with ascarids than those at Detroit (53 per cent). The percentage of ascarid infestation of both Detroit and Washington dogs is much higher than Wharton figures (6.77 per cent) for Philippine infestation, which is rather surprising. In regard to hookworm infestation, the figures show just what would be expected. Philippine dogs show the highest percentage of hookworm infestations, 96.6 per cent; Washington dogs rank second, with 71 per cent (Hall) and 56 per cent (Sommer), while Detroit dogs show the smallest percentage, 35 per cent; the farther North we go, the smaller the degree of infestation. In regard to whipworm infestation, we find that Washington dogs have a higher percentage of infestation (57 per cent, according to

Hall's figures, and 70 per cent, according to Sommer's) than Detroit dogs (41 per cent).

It thus appears that freezing temperatures of several days' duration would tend to diminish the degree of parasitic infestation, and it therefore seems feasible that manure or feces might be disinfected against most parasitic ova, especially hookworm ova, by being kept at very low temperatures for several days, without destroying the value of the manure as fertilizer, were this procedure practicable.

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A NEW FLUKE FROM THE DOG.

MEYER WIGDOR, M. A.
Research Laboratory of Parke, Davis & Co., Detroit, Mich.

Recently Hall and Wigdor (1918) reported the occurrence of two new flukes, *Alaria americana* and *Alaria michiganensis*, in Detroit dogs, which were the first authentic cases of intestinal fluke infestation of dogs in North America. In fact, the only fluke that appears to have been reported from dogs in the United States is *Paragonimus kellicotti*, which occurs as a pulmonary parasite of dogs, cats and swine.

In our series of 350 dogs examined postmortem at Detroit, intestinal flukes were found in 8 animals, *A. americana* and *A. michiganensis* being represented in 7 of these and a new, heretofore undescribed, species (12 specimens) in the other.

An examination of this new species of fluke shows that it falls into the sub-family Opisthorechiinae, but it cannot be correlated with any well-established genus within that group, and hence has been placed in a new genus, *Hallum*, Wigdor, 1918.

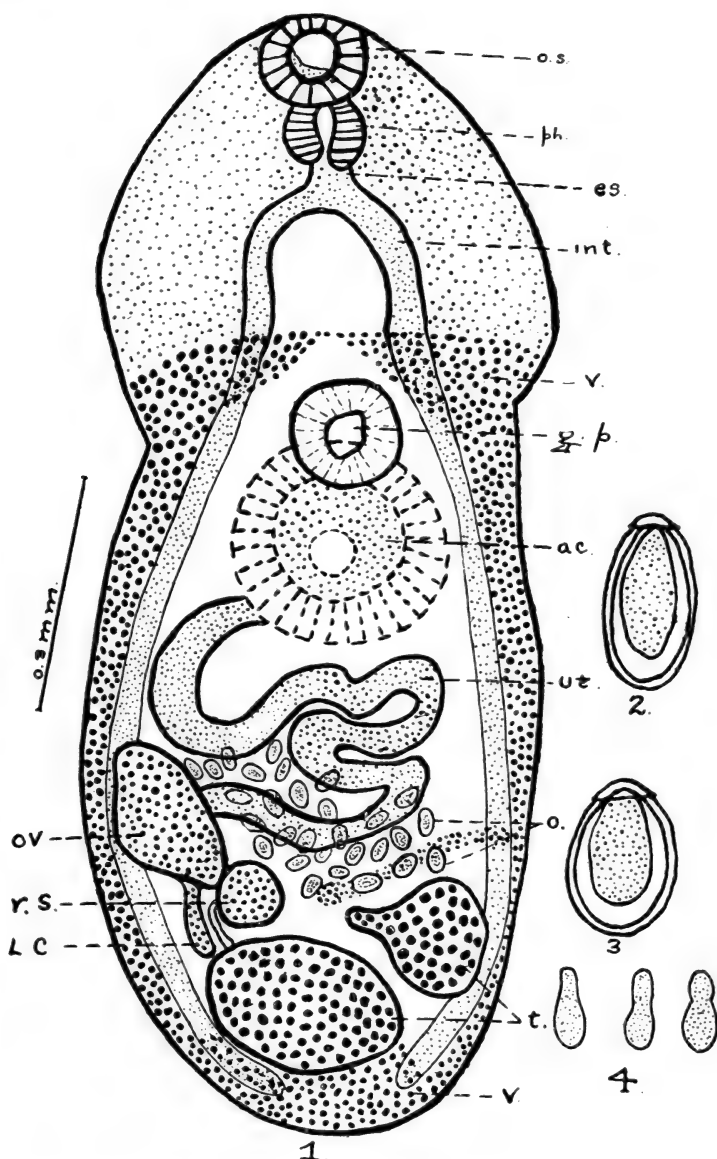


FIGURE 1. HALLUM CANINUM. DORSAL VIEW.

o.s. = oral sucker; ph. = pharynx; es. = esophagus; int. = intestine;
 v. = vitellaria; g.p. = genital pore; ac. = acetabulum; ut. = uterus;
 o. = ova; t. = testes; ov. = ovary; r.s. = receptaculum seminis;
 L.C. = Laurer's Canal.

FIGURES 2-3. Hallum caninum Ova $\times 230$.

FIGURE 4. Hallum caninum $\times 5$.

This genus appears to fill a gap in the genera of the sub-family Opisthorchiinae as regards the extent of the vitellaria. In the genus *Opisthorchis*, the vitellaria are confined in the area posterior to the acetabulum and anterior to the ovary and testes; in the genus *Amphimerus*, the vitellaria do not extend anteriorly beyond the acetabulum and frequently extend posteriorly to or beyond the posterior testis; in the genus *Metorchis*, the vitellaria extend anteriorly beyond the acetabulum and do not extend beyond the ovary and testes; in the genus *Hallum*, however, the vitellaria extend anteriorly beyond the acetabulum and posteriorly beyond the ovary and testes.

Members of the sub-family Opisthorchinae have been reported as occurring in the bile ducts or gall bladder of man, mammals, birds, reptiles and fish, this being the first report of the occurrence of one of the species of this group as an intestinal parasite.

SUB-FAMILY OPISTHORCHIINÆ, LOOSS, 1899.

Sub-family diagnosis—Fasciolidae of medium size, with slender elongated body, noticeably tapering anteriorly. Suckers near each other and generally not strongly developed. Pharynx present. Esophagus short and slender, intestinal ceca long and simple. Excretory system Y-shape, arms short, main stem long and S-shape, winding between the testes. Genital pore median and anterior to the acetabulum. Copulatory organs present. Testes close together in the posterior end, the one more or less obliquely behind the other. Laurer's canal present. Receptaculum seminis very strongly developed. Uterine coils anterior to the ovary. Vitellaria strongly developed, lateral of the intestinal ceca.

GENUS HALLUM, WIGDOR, 1918.

Generic diagnosis—Thin, flattened, transparent, forms with body often attenuated at anterior extremity and a posterior broader end; anterior end sometimes constricted at the level of the acetabulum; anterior extremity frequently covered with small, retrose spinelets. Suckers quite widely separated. Acetabulum larger than the oral sucker. Digestive tract with distinct muscular pharynx, short esophagus and two long simple intestinal ceca. Genital pore median, immediately anterior to the acetabulum. Copulatory organs absent. Testes in posterior portion of the body, simple or lobate, the one obliquely posterior to the other. Ovary slightly anterior to testes, either simple or slightly lobed. Laurer's canal and receptaculum seminis present. Uterine coils anterior to ovary and generally do not extend over the intestinal ceca. Vitellaria in one region, well-developed extending cephalad beyond the acetabulum and posteriad beyond

the posterior testes; vitellaria lateral of the intestinal ceca in post-acetabular region and often extending median in pre-acetabular region.

Type species—*Hallum caninum*, Wigdor, 1918.

SPECIES HALLUM CANINUM, WIGDOR, 1918.

Specific diagnosis—Body flat and transparent; anterior portion bluish and posterior whitish; anterior portion either attenuated or constricted in the region of the acetabulum. Anterior portion of body usually covered with small retrose spinelets. Length of body 0.902—1.646 mm. Width at widest part 0.431—.470 mm. Oral sucker sub-terminal 0.066—0.104 mm. in diameter. Length of pharynx 0.066—0.080 mm. Esophagus very short, 0.040—0.060 mm. long. Intestinal ceca usually equal, extending to the posterior end of the body. Acetabulum much larger than oral sucker, measuring 0.136—0.184 mm. in diameter, and situated somewhat anterior of the middle of the body. Genital pore prominent, median, at anterior margin of the acetabulum. Ovary usually slightly anterior to testes, oval or elliptical in shape and usually smooth in outline. Cirrus pouch absent. Testes approximately in posterior eighth of body, one obliquely behind the other, usually orbicular or oval in shape and either smooth or lobed in outline. Uterine coils well developed, filling a good portion of the body between the intestinal ceca, the ovary and the acetabulum, the coils not extending over the intestinal ceca. Laurer's canal and receptaculum seminis present, but usually not very prominent. Vitellaria well developed, extending 0.120—0.220 mm. anterior of the acetabulum and posterior beyond the posterior testis, filling up most of the posterior portion of the body posterior of the testes. The vitellaria usually extend laterad of the intestinal ceca in the post-acetabular portion of the body, but usually extend over the intestinal ceca to the middle of the body anterior of the acetabulum. Eggs reddish brown, with a distinct lid and opercular rim, measuring 0.032—0.048 mm. by 0.018—0.022 mm.

Host—*Canis familiaris*.

Location—Small intestine.

Locality—Detroit, Mich.

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ABSTRACTS FROM RECENT LITERATURE.

SUNLIGHT IN THE TREATMENT OF EQUINE MANGE.

M. Dieudonné, in *Recueil de Médecine Vétérinaire*, 15 Juillet, 1918, recorded several cases in which mange was cured by the open-air treatment and exposure to sunlight.

Ordinary treatment did not prove successful, but the author states that sunlight kills the mange acari, and he also suggests that moonlight has a similar effect, probably by the ultra-violet rays that it is said to project. Similar remarks apply to lice.

PUNCTURED NAVICULAR BURSA WITH NECROSIS OF THE APONEUROSIS.

In reporting these cases, I think the great factor of success was the use of an autogenous vaccine.

The two cases ran a similar course; both had been treated by owners with poultices until the lameness became excessive; when I was called in there was a free discharge of synovia and pus from the wound at side of frog.

Treatment consisted of thinning the sole and frog, and opening the puncture as much as possible. The foot was daily bathed in Jeyes', a carefully applied antiseptic dressing was put on with a leather boot over all. Excessive granulations were kept down with caustic dressing, CuSO_4 , when necessary.

A swab was sent for autogenous vaccine, and the vaccine was given for six consecutive days. There was distinct reaction, lameness and discharge being increased. Two or three days after the finish of the vaccine a portion of the necrotic aponeurosis about the size of a shilling was found in the dressing. After this, discharge gradually became less and complete healing quickly took place.

By the use of caustic and the knife the puncture in sole was kept open, which gave a fairly free exit to the portion of the necrotic tendon.

I do not know if practitioners in this country carry out the classical operation of resection; if so, I have never seen a case reported. It would be interesting to have the experiences of anyone who has done this operation for the cure of necrosis of the aponeurosis.—G. E., in *Veterinary Record* (London).

THE PHYSICO-PHYSIOLOGICAL TREATMENT OF TRAUMATIC ABDOMINAL HERNIA IN THE HORSE.

G. Mullie, in the *Recueil de Médecine Vétérinaire* for 1917, relates three observations upon cases of hernia of this class. The results of his treatment enable him to conclude that certain abdominal hernias may be treated easily and efficaciously by the elevation of the posterior third of the body and the observation of a reduced diet. This treatment is especially applicable to cases of traumatic hernia with posterior localization and with a hernial ring of narrow diameter.

The position, declining from behind forwards, which is given to the horse during the treatment, by its mechanical effects permits the intestinal mass to be directed and drawn towards the antero-inferior region of the abdomen. These effects may cause the spontaneous reduction of the herniated mass, and the consequent cicatrization of the abdominal traumatism. The concentration of the diet, by diminishing the volume of the gastro-intestinal mass, is a powerful aid in obtaining the desired result.—*Revista de Higiene y Sanidad Pecuarias*.

RUPTURE OF AN INTESTINAL DIVERTICULUM.

R. Paille, in *Recueil de Médecine Vétérinaire*, 15 Juillet, 1918, reported a case of the above lesion in a mare. The animal was admitted to infirmary suffering from acute abdominal pain, which resisted all treatment. Death occurred on the following day. The autopsy revealed an abundant peritoneal effusion, with marked congestion of the mesentery, and of the peritoneum, especially on the visceral layer. Multiple deposits of fibrinous exudate were present, notably at the crook of the cæcum. A diverticulum of the ileum, the size of a fist, was found, situated 20 centimetres from the termination of this bowel. It was separated into compartments by septa, and was perforated in two

places. The interior of the pouch contained putrified ingesta, its mucous lining was granular, of a greenish yellow color, and its wall was very thin at the level of the two perforations. By the side of this cavity another one was found, partitioned off by a septum—a sort of small infundibulum, the floor of which was ulcerated and of a dark red color.

SEAWEED AS HORSE FEED.

The following is from a report by M. Adrian, of the French Ministry of War:

The analysis of seaweed as compared with oats as shown by M. Balland is as follows:

	SEAWEED %	OATS %
Water	14.40	12.55
Hydrocarbons	52.90	68.80
Nitrogen	17.30	9.10
Cellulose	11.50	8.45
Mineral matter	3.90	3.10

It will be seen that the seaweed from which the salt has been extracted contains less hydrocarbonated matter, but a much higher percentage of nitrogen, making it a very nutritious product if digestible and assimilated.

In June, 1917, some horses belonging to M. Verdier-Dufour, of Aubervilliers, were in a bad state from lymphangitis. There were six horses. Three had ordinary diet of oats, hay and straw, and three were fed on alimentary seaweed. They were kept at work. For the first eight days alimentary seaweeds were substituted for oats at a rate of 0.35 kilo. for 0.45 of oats. During the rest of the experiment, which lasted 24 days, seaweed was substituted entirely for oats. On the 24th day the horses fed on seaweed were found to have increased 6 per cent. in weight and their general condition had improved and the lymphangitis had disappeared. In the other three animals fed on ordinary diet the lymphangitis did not improve.

The animals had accepted, digested and assimilated the new food in place of oats.

Experiments were made on 20 horses of the First Cuirassiers, which were divided into two lots, and one lot placed on normal diet and the other given 1 kilo. of alimentary seaweed in place of the kilo. of oats. The experiments were under the supervision of MM. Jacoulet and Fray; they lasted two months, and it was

found that on weighing the horses, those fed on seaweed had gained individually 13 kilos. in two months, whilst the others had scarcely gained 2 kilos.

Seaweed grows abundantly on the coast of Brittany. It is considered that 0.75 kilo. of alimentary seaweed is equal to 1 kilo. of oats, but this point requires further elucidation.

As a substitute for oats there should be a great future before seaweed. France imports 2,000,000 quintals of oats yearly, representing a sum of 35,000,000 francs. If the seaweed can supply a supplementary crop to the home fields, much money sent out of the country for oats will remain at home.—*Veterinary Journal*.

PROGRESS OF TICK ERADICATION SHOWN.

To show the progress of the tick eradication work, the United States Department of Agriculture staged an exhibit at the Southern Land Congress held at Savannah, Ga., November 11 and 12. The exhibit showed that 1918 was a record year in freeing southern territory from the tick quarantine, 79,217 square miles being released. A map was included in the exhibit showing the territory originally in quarantine and the territory freed since it was established in 1906. Four field men of the department, who are employed in the tick eradication work, and a representative from the Bureau of Animal Industry attended the congress.

Dr. G. R. Loudon has been transferred from the work of tick eradication, Baton Rouge, La., to such work on the Fort Worth, Texas, force.

Dr. G. T. Jackson has been transferred from the work of tick eradication, Baton Rouge, La., to such work on the Jacksonville, Florida, force.

Dr. V. H. Stevens has been transferred from the work of tick eradication, Baton Rouge, La., to the work of tuberculosis eradication on the Harrisonburg, Pennsylvania, force.

Dr. H. N. Guilfoyle, formerly of the Baton Rouge, La., force, has finally received a passport and credentials from the War Department and will report for duty the middle of November.

Dr. Frank W. Schofield, formerly in the Dominion Government service, who will be remembered in connection with work done on pyemic arthritis in foals, is now with the Severance Union Medical College, Seoul, Chosan, Korea.

ARMY VETERINARY SERVICE.

A VISIT TO CAMP GREENLEAF.

Nothing could be of greater interest to a veterinarian than a visit to one of the Medical Officers' Training Camps and see what is being done to equip the Veterinary Branch of the Army for service that will enable it to help win the war.

The objects of the Veterinary Section are to train veterinarians from civil life in the duties and conduct of military officers and to coördinate veterinary knowledge along lines of most use in the Army.

The course is not an intensive one along veterinary lines, but is such along military lines, including all the subjects usually given in officers' training camps.

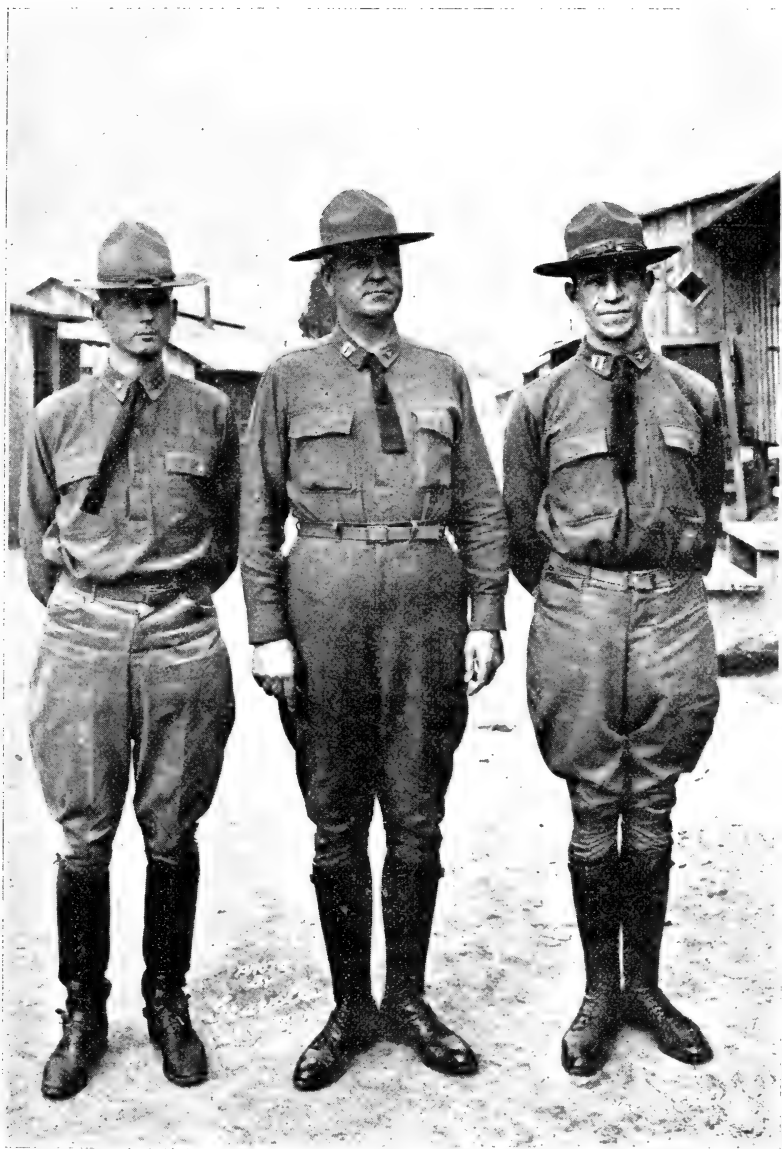
Prior to September 1, veterinary student officers were assigned to Battalion Seven, and this battalion was composed of student officers from several branches of the Medical Department, including medical, dental, sanitary and veterinary officers. On that date several new battalions were authorized, and Battalion Twelve is exclusively veterinary, being officered entirely by veterinarians, which has greatly facilitated the work of training veterinary officers.

The course of instruction covers eight weeks, the first four being devoted to basic military work, lectures and drill, and the second four weeks is taken up with part military work, drill, and veterinary instruction.

Two classes are run simultaneously, approximately one hundred officers being received each month, and a like number graduated each month. After completing the course of instruction, veterinary officers are assigned to various posts and duties.

For the purpose of instruction, and in order that there shall be no conflict in the matter of rank, all student officers reporting for a course of training are required to lay aside all insignia of rank, and all are handled, drilled, housed and trained as a battalion of privates. Company officers are chosen from the ranks, and it is the custom to rotate these officers in order to give as many as possible the opportunity for training.

Veterinary officers now reporting for training are from the men commissioned as a result of examinations given subsequent



INSTRUCTORS VETERINARY SECTION, M. O. T. C.,
CAMP GREENLEAF, GEORGIA.

From left to right: Major Wilfred J. Stokes, V. C., Senior Instructor and Camp Veterinarian; Captain Otis A. Longley, V. C., Instructor; Captain Fonsa A. Lambert, Instructor and Commanding Officer, Twelfth Battalion.

to the reopening of the privilege on August 1. Such a complete change in manners and customs proves to be a little difficult for some of the men, but, almost without exception, all soon acquire the proper "esprit" and get along like a big class of schoolboys.

And while strict discipline is enforced, and student officers are busy most of the time, the occasional periods of recreation are taken advantage of, and all sorts of innocent fun are carried on.

RECOGNITION FOR ARMY VETERINARY CORPS.

In September, Lieutenant Colonel David S. White, Veterinary Corps, was appointed Chief Veterinarian of the American Expeditionary Forces in France. This action of General Pershing places a veterinarian in immediate charge of the Army Veterinary Service in France and brings to a satisfactory conclusion the hard fight the Veterinary Corps has had to make for recognition; it also puts into complete operation the plan of organizing the Veterinary Service of the Army which was recommended by the Veterinary Advisory Board appointed by the Surgeon General last August. Lieutenant Colonel White was a member of this Board, the other members being Lieutenant Colonel C. J. Marshall, Major Louis A. Klein, Dr. John R. Mohler and Dr. V. A. Moore.

The plan of organization was put into operation in this country last fall and has proven to be admirably adapted to the needs of the service here. There is every reason to believe that it will operate equally as satisfactorily in France. It is based very largely upon the organization of the Veterinary Service of the British Army, which in four years of active operations in France has fully demonstrated its efficiency and rendered very valuable service to the British Army.

Lieutenant Colonel White has taken up a very large burden which is charged with great responsibility, but with the loyal support of his colleagues there is no doubt that he will be able to organize and operate a veterinary service which will be a credit to the Veterinary Corps.

The decision of the Comptroller, reprinted in our last number from the Army and Navy Journal, that a veterinarian in the Army cannot be promoted to the rank of major, refers only to permanent commissions and is based upon the Act of Congress approved June 3, 1916. Under general orders approved by the

Secretary of War, which were issued as a result of representations made by the Veterinary Advisory Board, veterinarians may be commissioned up to the rank of colonel for the present war. Under this authority a number of veterinarians are holding commissions as majors and four as lieutenant colonels as follows: C. J. Marshall, R. J. Stanclift, David S. White and Gerald G. Griffin. No veterinarian has as yet been commissioned as a colonel.

MAJOR J. H. BLATTENBERG COMMUNICATES INTERESTINGLY.

In a communication to Dr. Sheets, in charge of his affairs in his home town, Major J. H. Blattenberg gives some very interesting information, a part of which we cull from the Republican Gazette, Lima, Ohio, as follows:

This is five o'clock in the morning that I am penning you a few lines. The reason I am writing at this dark hour of the morning is that I have just sent one hundred and fifty good horses to the front, four to a man, who rides one and leads three.

The public may not think of the horse and the mule as very valuable adjuncts in this so-called motor age, but I am permitted to say that they are helping wonderfully in winning this war; in fact, no one here would suggest that a single animal could be dispensed with; more are needed.

The officers and men at the real fighting front must have so many varieties of supplies, ammunition, guns and artillery, and there are so many places which prevent motor transportation, it is inadequate to the situation, so the horseless age, as we are inclined to look at it, because of the great output of motors, is not here and will not be here for some time to come—in war, at least. All kinds of animals are certainly doing their part in this great conflict in helping the organizations at the real active front and everything is made to bend to their sustenance, care and support. Men and animals deserve and get the first attention if they are serving near or in the front line.

I am not in the Fifth Division now. I have been placed as the commanding officer in the largest and best equipped army veterinary hospital in France. The first officer who had charge of it was Major Merillat of Chicago, who is now veterinarian for the First Army Corps. Major McKillip of Chicago followed Major Merillat.

I have a very good organization of officers and men. I have three companies of men and look for another company to be attached. We receive from the front lines poor, emaciated animals suffering from disease, most of which is mange, distemper and infectious lymphangitis, also wounds and injuries of war. Many need nothing but rest, feed and medical treatment to bring them back to condition. We are continually receiving animals and in turn pick out those that will require prolonged treatment and evacuate them to smaller hospitals in the rear.

I am not quite as close to the real front as when with the division, but not so far but what the guns at the front can be heard plainly and at night the flashes can be seen. We are not overlooked as to air raids, however, which are usually at night, especially on a bright moonlight night.

PERSONAL MENTION.

First Lieutenant Grenfell, Veterinary Corps, formerly of Washington, D. C., was badly wounded and gassed in a recent offensive in France. The wound consists of a compound fracture of the leg, the result of a shell explosion. He is at a base hospital.

Major W. P. Hill, who has been in France for three years in connection with the veterinary branch, returned to America late in October.

Major George McKillip, formerly in charge of Base Hospital No. 6, is now inspector at ports in France.

Colonel Aikin is assisting Colonel D. S. White, who is in charge of all the veterinary work in France.

All of the veterinary work in France has been placed under the Medical Department.

Veterinary Base Hospital No. 6, probably the largest and best equipped in France, maintains a school for casual veterinarians who may be sent there for a ten days' course of lectures. These lectures deal with the special veterinary problems as they are encountered in France. At this hospital there are a large number of horses and mules that are treated and returned to the front. All of the forage is under shelter. This hospital was first in charge of Major L. A. Merillat. Later Major George McKillip was in command. Major McKillip has recently been made inspector at ports in France, and Major John Blattenberg is now in command of Base Hospital No. 6.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President V. A. Moore has appointed the following committees and Resident State Secretaries:

COMMITTEE ON RESOLUTIONS.

C. A. Cary, Auburn, Alabama, Chairman.
C. D. McGilvray, 110 University Ave., Toronto, Ont., Canada
S. H. Ward, Minneapolis, Minnesota.
H. Jensen, Kansas City, Missouri.
Otto Faust, Poughkeepsie, New York.

AUDITING COMMITTEE.

H. K. Ryder, Chicago, Illinois, Chairman.
L. Enos Day, Chicago, Illinois.
W. H. Robinson, Portland, Maine.
C. G. Lamb, Denver, Colorado.
W. J. Martin, Kankakee, Illinois.

COMMITTEE ON NECROLOGY.

J. W. Connoway, Columbia, Missouri, Chairman.
R. W. Ellis, New York City.
E. A. Cahill, Zionsville, Indiana.
J. B. Hollingsworth, Ottawa, Ont., Canada.
G. F. Jungerman, Hiawatha, Kansas.

COMMITTEE ON HISTORY.

At the Philadelphia meeting a resolution was passed calling for the appointment of a committee on veterinary history to consist of one man from the army, one from the Bureau of Animal Industry, one from Canada, one from schools and one from practice.

R. C. Moore, St. Joseph, Missouri, Chairman, representing the schools.

Major C. D. McMurdo, Chicago, Illinois, representing the army.

U. G. Houck, Washington, D. C., representing the Bureau of Animal Industry.

C. H. Higgins, Ottawa, Canada, representing Canada.

Geo. H. Berns, Brooklyn, New York, representing practice.

COMMITTEE ON ANATOMICAL NOMENCLATURE.

H. S. Murphy, Ames, Iowa, Chairman.
S. Sisson, Columbus, Ohio.
I. Ernest Newsom, Fort Collins, Colorado.

F. W. Chamberlain, East Lansing, Michigan.
 Mark Francis, College Station, Texas.

COMMITTEE ON ARMY SERVICE.

Lieutenant Colonel C. J. Marshall, Philadelphia, Pennsylvania, Chairman.

Jno. R. Mohler, Washington, D. C.

L. H. Howard, Boston, Massachusetts.

Lieutenant Colonel R. J. Stanclift, Washington, D. C.

Major W. H. Lytle, Salem, Oregon.

SALMON MEMORIAL COMMITTEE.

President Moore has added the name of Dr. Jno. R. Mohler to the Salmon Memorial Committee.

LIAUTARD MEMORIAL COMMITTEE.

It was the intention of former President Torrance to appoint Dr. S. Brenton, who was a personal friend of the late Dr. Liautard, a member of the Liautard Memorial Committee, but, owing to an error, the name of Dr. W. L. Brenton was announced. This mistake has been corrected, and Dr. S. Brenton will act on the committee.

N. S. M.

RESIDENT SECRETARIES FOR 1918-1919.

Alabama—D. L. Allen, Auburn.

Arizona—J. C. Norton, Fleming Block, Phoenix.

Arkansas—R. M. Gow, Old State House, Little Rock.

Alberta—M. V. Gallivan, Lethbridge, Alta.

California—George H. Hart, Berkeley.

Colorado—I. E. Newsom, Colorado State College, Fort Collins.

Connecticut—Thos. Bland, 74 Phoenix Ave., Waterbury.

Delaware—H. P. Ives, Wilmington.

District of Columbia—R. W. Hickman, Washington.

Florida—L. E. Lyons, Tallahassee.

Georgia—Wm. Burson, Athens.

Hawaii—V. A. Norgaard, Honolulu.

Idaho—R. B. Hurd, Payette.

Illinois—W. H. Welch, Lexington.

Indiana—G. H. Roberts, Indianapolis.

Iowa—Hal C. Simpson, Denison.

Kansas—L. W. Goss, Manhattan.

Kentucky—S. L. Musselman, Frankfort.

Louisiana—E. I. Smith, Baton Rouge.

Maine—H. B. Westcott, Portland.

Maryland—F. H. Mackie, Baltimore.

Massachusetts—L. Frothingham, Boston.

Manitoba—W. A. Hilliard, Winnipeg, Man.

Minnesota—C. P. Fitch, St. Paul.

Mississippi—E. M. Ranck, Agricultural College.

Missouri—L. S. Backus, Columbia.

Montana—A. D. Knowles, Missoula.

Michigan—H. P. Hoskins, 50 Tireman Ave., Detroit.

Nebraska—J. S. Anderson, Seward.

New Hampshire—A. C. Farmer, Berlin.

Nevada—E. J. Records, Reno.

New Jersey—E. T. Smith, Jersey City.

New Mexico—G. A. Lipp, Roswell.

Nova Scotia—Geo. Townsend, New Glasgow, N. S.

New York—W. G. Hollingworth, Utica.
 North Carolina—G. A. Roberts, West Raleigh.
 North Dakota—C. H. Babcock, New Rockford.
 Ohio—C. H. Case, Akron.
 Ontario—George Hilton, Ottawa, Ont.
 Oklahoma—John S. Grove, Oklahoma City.
 Oregon—B. T. Simms, Corvallis.
 Pennsylvania—H. W. Turner, Pittsburg Union Stock Yards.
 Prince Edward Island—W. H. Pethick, Charlottetown.
 Philippines—Stanton Youngberg, Manila.
 Quebec—A. A. Etienne, Montreal.
 Rhode Island—T. E. Robinson, Westerly.
 Saskatchewan—M. Barker, Saskatoon.
 South Carolina—F. P. Caughman, Columbia.
 South Dakota—J. T. E. Winwoodie, Brookings.
 Tennessee—F. W. Morgan, Chattanooga.
 Texas—R. P. Marsteller, College Station.
 Utah—John Ernst, Salt Lake City.
 Vermont—F. A. Rich, Agri. Exp. Station, Burlington.
 Virginia—W. G. Chrisman, Blacksburg.
 Washington—J. T. Seeley, Seattle.
 West Virginia—S. E. Hershey, Charleston.
 Wisconsin—W. A. Wolcott, Madison.
 Wyoming—H. R. Millard, Cheyenne.

N. S. MAYO, Secretary.

ADDITIONS TO THE MEMBERSHIP AT THE PHILADELPHIA MEETING.

ALABAMA

McCormack, Lt. W. D.....Dora
 Allen, D. L.....Auburn

ARIZONA

Gerdes, H. E.....Phoenix

ARKANSAS

Ewing, F. R.....A. R. D., 317, Camp Pike
 Barber, O. A.....A. R. D., 317, Camp Pike
 Campbell, O. D.....Warren
 Getz, H. R.....care of B. A. I., Mena
 Johnson, P. A.....Old State House, Little Rock
 Wilson, H. W.....A. R. D., 317, Camp Pike

CALIFORNIA

Dobbs, E. M.....Davis
 Graham, G. D.....720 Valencia St., San Francisco
 Jones, Capt. E. C.....Camp Vet., Camp Kearny
 Musser, Maj. R. C.....Div. Vet., 8th Div., Camp Fremont
 Nockolds, C.....Div. Vet., 40th Div., Camp Kearny
 Parks, I. W.....A. R. D., 332, Camp Fremont
 Robertson, R. J.....3615 Iron St., Chicago
 Sinai, Nathan.....229 E. Church St., Stockton
 Wyatt, D. H.....Santa Paula

COLORADO

Carson, W. L.....303 Live Stock Exchange Bldg., Denver
 Elliott, J. A.....3035 Race St., Denver
 Harrington, C. F.....679 Grant St., Denver
 Leeper, R. B.....Stock Yards Sta., Denver

CONNECTICUT

Conway, W. T.....179 Elm St., West Haven
 Kronfeld, C. L.....101 Albany Ave., Hartford
 Schofield, E. F.....58 E. Elm St., Greenwich
 Birmingham, E. A.....135 Washington Ave., Bridgeport

DELAWARE

McDaniel, Harry, Jr. 220 S. State St., Dover
 Ruhl, F. P. Milford

DISTRICT OF COLUMBIA

Bosley, Harry. 309 6th St., N. W., Washington
 Catlett, J. G.,

Purchasing Officer Public Animals, Remount Division, Washington
 Collins, W. P. 2130 P St., N. W., Washington
 Middleton, W. G. 612 L St., N. W., Washington
 Graham, J. W. 2030 N. Capitol St., Washington
 Carpenter, P. F.,

Purchasing Officer Public Animals, Remount Division, Washington
 Saunders, Albert, Jr.,

Purchasing Officer Public Animals, Remount Division, Washington
 Dunn, C. W.,

Purchasing Officer Public Animals, Remount Division, Washington

FLORIDA

Lyons, L. E. State Live Stock Sanitary Board, Tallahassee
 Stever, A. C. 504 Florida Life Bldg., Jacksonville
 Haven, E. F. 8th and Talleyrand, Jacksonville

GEORGIA

Aitken, W. A. 23 Cav., F. A., Fort Oglethorpe
 Beeman, Capt. H. N. Bn. 7, Camp Greenleaf
 Benner, Lt. J. W. Co. 28, Bn. 7, Camp Greenleaf
 Boulton, Lt. W. D. Co. 28, Bn. 7, Camp Greenleaf
 Boazman, Lt. J. B. Co. 28, Bn. 7, Camp Greenleaf
 Breeden, Lt. G. L. Co. 28, Bn. 7, Camp Greenleaf
 Brinkman, R. L. Bureau Animal Industry, Cairo
 Burkhart, W. C. Athens
 Butler, F. E. Hdqrs., 31st Div., Camp Wheeler
 Chase, Lt. E. E. Co. 28, Bn. 7, Camp Greenleaf
 Cockerton, Lt. E. B. Co. 29, Bn. 7, Camp Greenleaf
 Cook, Lt. H. T. Co. 28, Bn. 7, Camp Greenleaf
 Crow, Lt. L. C. Co. 28, Bn. 7, Camp Greenleaf
 Cropper, R. E. Greenville
 Duckworth, Lt. R. E. Co. 29, Bn. 7, Camp Greenleaf
 Eastman, Lt. Chas. Bn. 7, Camp Greenleaf
 Farr, Lt. H. L. Co. 28, Bn. 7, Camp Greenleaf
 Geick, Lt. W. A. Bn. 7, Camp Greenleaf
 Guldner, Lt. R. C. Bn. 7, Camp Greenleaf
 Gilbert, Lt. G. E. Co. 29, Bn. 7, Camp Greenleaf
 George, Lt. F. H. Co. 31, Bn. 7, Camp Greenleaf
 Houston, Lt. F. D. Co. 28, Bn. 7, Camp Greenleaf
 Johnston, Lt. E. J. Co. 30, Bn. 7, Camp Greenleaf
 Jones, Lt. G. B. Co. 28, Bn. 7, Camp Greenleaf
 Hornbaker, Lt. H. R. 321st F. A., Camp Gordon
 Kitchofer, Lt. J. H. Co. 28, Bn. 7, Camp Greenleaf
 Kyle, Lt. W. M. Bn. 7, Camp Greenleaf
 Luster, Lt. M. J. Bn. 7, Camp Greenleaf
 Lee, F. M. A. R. D., 311, Macon
 McIntosh, Lt. H. K. 321st F. A., Camp Gordon
 McMillen, Lt. C. M. Co. 28, Bn. 7, Camp Greenleaf
 Martin, W. A. Camp Q. M. C., Camp Gordon
 McLain, Lt. W. H. Box 703, Camp Greenleaf
 Nettleton, Lt. E. N. Co. 29, Bat. 7, Camp Greenleaf
 Northway, Lt. J. K. Co. 28, Bat. 7, Camp Greenleaf
 Naylor, Lt. H. W. Bat. 7, Camp Greenleaf
 Purdy, D. M. Co. 29, Bat. 7, Camp Greenleaf
 Palmer, Lt. C. C. Co. 29, Bat. 7, Camp Greenleaf
 Popelars, Lt. W. E. Co. 28, Bat. 7, Camp Greenleaf
 Porteus, Robert. Camp Hdqrs., Camp Gordon
 Regenos, Lt. S. H. Co. 29, Bn. 7, Camp Greenleaf

Richardson, Lt. J. W.	Co. 29, Bn. 7, Camp Greenleaf
Robbins, H.	526 Federal Bldg., Atlanta
Robertson, Lt. W. S.	Co. 29, Bn. 7, Camp Greenleaf
Roper, Lt. A. J.	Co. 28, Bn. 7, Camp Greenleaf
South, Lt. R. L.	Co. 29, Bn. 7, Camp Greenleaf
Seute, Lt. W. H.	Co. 28, Bn. 7, Camp Greenleaf
Young, Lt. C. H.	Co. 28, Bn. 7, Camp Greenleaf
Agin, Lt. B.	Co. 28, Bn. 7, Camp Greenleaf
Albright, Lt. W.	Co. 28, Bn. 7, Camp Greenleaf
Allen, Lt. L. H.	Box 732, Camp Greenleaf
Allott, Lt. A. J.	Co. 30, Bn. 7, Camp Greenleaf
Ash, Lt. H. E.	Bn. 7, Camp Greenleaf
Ashby, Lt. J. O.	Co. 28, Bn. 7, Camp Greenleaf
Baily, Lt. J. M.	Co. 30, Bn. 7, Camp Greenleaf
Bennett, Lt. J. H.	Co. 30, Bn. 7, Camp Greenleaf
Bibens, Lt. D. H.	Bn. 7, Camp Greenleaf
Blomquist, Lt. C. A.	Co. 28, Bn. 7, Camp Greenleaf
Boyle, Lt. W. H.	Co. 28, Bn. 7, Camp Greenleaf
Brant, Lt. F. F.	Co. 29, Bn. 7, Camp Greenleaf
Brooks, Lt. R. G.	Co. 30, Bn. 7, Camp Greenleaf
Brostrom, Lt. F. O.	Bn. 7, Camp Greenleaf
Brown, Lt. V. H.	Box 327, Camp Greenleaf
Buck, Lt. W. C.	Bn. 7, Camp Greenleaf
Button, Lt. O. G.	Co. 30, Bn. 7, Camp Greenleaf
Campbell, Lt. H. L.	Co. 30, Bn. 7, Camp Greenleaf
Campbell, Lt. J. S.	Co. 30, Bn. 7, Camp Greenleaf
Carey, Lt. E. F.	Co. 30, Bn. 7, Camp Greenleaf
Carroll, Lt. T. E.	Co. 30, Bn. 7, Camp Greenleaf
Chamberlain, Lt. A. H.	Co. 29, Bn. 7, Camp Greenleaf
Christ, Lt. F. J.	Co. 30, Bn. 7, Camp Greenleaf
Clem, Lt. B. H.	Bn. 7, Camp Greenleaf
Cooke, Lt. C. P.	Co. 31, Bn. 7, Camp Greenleaf
Corson, Lt. J. D.	Co. 30, Bn. 7, Camp Greenleaf
Crawford, Lt. C. D.	Bn. 7, Camp Greenleaf
Cripe, Lt. O. H.	Co. 30, Bn. 7, Camp Greenleaf
Currier, Lt. B. L.	Co. 28, Bn. 7, Camp Greenleaf
Diller, Lt. O. A.	Co. 29, Bn. 7, Camp Greenleaf
Dickman, Lt. A. J.	Box 804, Camp Greenleaf
Dionne, Lt. C. A.	Bn. 7, Camp Greenleaf
Dooley, Lt. C. T.	Co. 28, Bn. 7, Camp Greenleaf
Dornbusch, Lt. E. A.	Co. 28, Bn. 7, Camp Greenleaf
Duff, Lt. D. R.	Bn. 7, Camp Greenleaf
Elsbury, Lt. N. W.	Co. 31, Bn. 7, Camp Greenleaf
Espy, Lt. S.	Bat. 7, Camp Greenleaf
Evans, Lt. R. C.	Co. 30, Bn. 7, Camp Greenleaf
Fargus, Lt. G. I.	Bn. 7, Camp Greenleaf
Faulkner, Lt. C. M.	Co. 31, Bn. 7, Camp Greenleaf
Foley, Lt. J. W.	Co. 28, Bn. 7, Camp Greenleaf
Fuller, Lt. R. W.	Bn. 7, Camp Greenleaf
Gilbert, Lt. R. D.	Co. 28, Bn. 7, Camp Greenleaf
Gilfillan, Lt. J. E.	Co. 31, Bn. 7, Camp Greenleaf
Gochenour, Lt. R. B.	Co. 28, Bn. 7, Camp Greenleaf
Good, Lt. G. H.	Co. 28, Bn. 7, Camp Greenleaf
Gootee, Lt. L. M.	Co. 29, Bn. 7, Camp Greenleaf
Gordan, Lt. W. D.	Bn. 7, Camp Greenleaf
Graham, Lt. H. C.	Co. 31, Bn. 7, Camp Greenleaf
Green, Lt. R. L.	Co. 30, Bn. 7, Camp Greenleaf
Guffey, Lt. H. M.	Co. 28, Bn. 7, Camp Greenleaf
Hahn, Lt. W. A.	Co. 30, Bn. 7, Camp Greenleaf
Hetherington, Lt. J. L.	Co. 31, Bn. 7, Camp Greenleaf
Henno, Lt. G. B.	P. O. Box 107, Camp Greenleaf
Herron, Lt. Lynn.	Co. 30, Bn. 7, Camp Greenleaf
Hoffman, Lt. H. A.	Co. 30, Bn. 7, Camp Greenleaf

Holby, Lt. V. A.....	Box 1109, Camp Greenleaf
Hoopes, Lt. H. A.....	Bn. 7, Camp Greenleaf
Hopper, Lt. F. M.....	Co. 31, Bn. 7, Camp Greenleaf
Howe, Lt. H. H.....	Co. 31, Bn. 7, Camp Greenleaf
Huff, Lt. R. S.....	Co. 29, Bn. 7, Camp Greenleaf
Irish, Lt. H. S.....	Co. 30, Bn. 7, Camp Greenleaf
James, Lt. W. D.....	Co. 31, Bn. 7, Camp Greenleaf
Jarvis, Lt. G. J.....	Co. 31, Bn. 7, Camp Greenleaf
Jones, Lt. G. M.....	Vet. Co. No. 1, Camp Greenleaf
Jones, Lt. J. K.....	Co. 28, Bn. 7, Camp Greenleaf
Juckiness, Lt. E. M.....	Co. 28, Bn. 7, Camp Greenleaf
Kauffman, Lt. G. R. H.....	Co. 30, Bn. 7, Camp Greenleaf
Kenny, Lt. B. P.....	Bn. 7, Camp Greenleaf
Koll, Lt. Harry.....	Bn. 7, Camp Greenleaf
Kummer, Lt. J. W.....	Co. 31, Bn. 7, Camp Greenleaf
Lamb, Lt. C. P.....	Bn. 7, Camp Greenleaf
LeBlanc, Lt. J. E.....	Co. 28, Bn. 7, Camp Greenleaf
Lee, Lt. T. M.....	Co. 28, Bn. 7, Camp Greenleaf
Lenker, Lt. C. B.....	Co. 28, Bn. 7, Camp Greenleaf
Libby, Lt. R. E.....	Co. 29, Bn. 7, Camp Greenleaf
Lodge, Lt. H. G.....	Bn. 7, Camp Greenleaf
Lucy, L. I.....	A. R. D., 311, Macon
Lynn, Lt. E. M.....	Co. 31, Bn. 7, Camp Greenleaf
Marshall, Lt. R. S.....	Co. 31, Bn. 7, Camp Greenleaf
Martin, Lt. E. M.....	Co. 28, Bn. 7, Camp Greenleaf
Masterson, Lt. J. E.....	Co. 31, Bn. 7, Camp Greenleaf
Mathers, Lt. L. H.....	Co. 28, Bn. 7, Camp Greenleaf
Mayne, Lt. E. W.....	Co. 31, Bn. 7, Camp Greenleaf
McClean, Lt. F. H.....	Co. 31, Bn. 7, Camp Greenleaf
McKibbin, Lt. J. A.....	Co. 30, Bn. 7, Camp Greenleaf
McNabb, Lt. F. R.....	Bn. 7, Camp Greenleaf
Melvin, Lt. V. W.....	Co. 31, Bn. 7, Camp Greenleaf
Miller, Lt. E. V.....	Bn. 7, Camp Greenleaf
Miller, Lt. L. E.....	Co. 30, Bn. 7, Camp Greenleaf
Mitchell, Jas. C.....	Co. 28, Bn. 7, Camp Greenleaf
Misner, Lt. A. C.....	Co. 31, Bn. 7, Camp Greenleaf
Moles, Lt. I.....	Co. 28, Bn. 7, Camp Greenleaf
Moorman, Lt. C. E.....	Co. 29, Bn. 7, Camp Greenleaf
Mosey, Lt. O. Q.....	Co. 31, Bn. 7, Camp Greenleaf
Moylan, Lt. E. J.....	Co. 28, Bn. 7, Camp Greenleaf
Neudecker, Lt. E. W.....	Co. 30, Bn. 7, Camp Greenleaf
Nichols, Lt. J. H.....	Bn. 7, Camp Greenleaf
Osborn, Lt. F. C.....	Co. 29, Bn. 7, Camp Greenleaf
Osborn, Lt. S. S.....	Co. 29, Bn. 7, Camp Greenleaf
Paley, Lt. I.....	Co. 31, Bn. 7, Camp Greenleaf
Parker, Lt. C. E.....	Co. 31, Bn. 7, Camp Greenleaf
Parrish, Lt. C.....	Box 1205, Camp Greenleaf
Pauhlman, Lt. V. C.....	Bn. 7, Camp Greenleaf
Perdue, Lt. F. B.....	Co. 31, Bn. 7, Camp Greenleaf
Peterson, Lt. W. L.....	Co. 28, Bn. 7, Camp Greenleaf
Petry, Lt. C. O.....	Co. 30, Bn. 7, Camp Greenleaf
Phalen, Lt. W. H.....	Co. 31, Bn. 7, Camp Greenleaf
Phelan, Lt. J. D.....	Co. 31, Bn. 7, Camp Greenleaf
Potter, Lt. L. R.....	Co. 30, Bn. 7, Camp Greenleaf
Potts, Lt. F. E.....	Co. 29, Bn. 7, Camp Greenleaf
Quarll, Lt. J. T.....	Co. 29, Bn. 7, Camp Greenleaf
Rabin, N. W.....	A. R. D., 311, Macon
Rasmussen, Lt. V. M.....	Bn. 7, Camp Greenleaf
Reece, Lt. D. E.....	Co. 31, Bn. 7, Camp Greenleaf
Reinhardt, Lt. R. R.....	Bn. 7, Camp Greenleaf
Roberts, Lt. L. L.....	Co. 31, Bn. 7, Camp Greenleaf
Rogers, Lt. E. M.....	Bn. 7, Camp Greenleaf
Rosenthal, Lt. H. H.....	Co. 30, Bn. 7, Camp Greenleaf

Ross, Lt. J. A.....	Co. 31, Bn. 7, Camp Greenleaf
Ryan, Lt. J. P.....	Co. 29, Bn. 7, Camp Greenleaf
Scanlon, Lt. W. J.....	Bn. 7, Camp Greenleaf
Schopmeyer, Lt. A. C.....	Co. 29, Bn. 7, Camp Greenleaf
Schuey, Lt. G. B.....	Co. 30, Bn. 7, Camp Greenleaf
Schwalm, Lt. O. C.....	Co. 28, Bn. 7, Camp Greenleaf
Secoy, Lt. C. W.....	Bn. 7, Camp Greenleaf
Seymour, Lt. R. C.....	Co. 28, Bn. 7, Camp Greenleaf
Sharp, Lt. L. P.....	Bn. 7, Camp Greenleaf
Shipley, Lt. M.....	Co. 28, Bn. 7, Camp Greenleaf
Showalter, Lt. R. A.....	Box 301, Camp Greenleaf
Smathers, Lt. D. L.....	Co. 29, Bn. 7, Camp Greenleaf
Smith, Lt. G. M.....	Co. 30, Bn. 7, Camp Greenleaf
Smith, Lt. R. L.....	Box 1805, Camp Greenleaf
Snedden, Lt. R. E.....	Box 700, Camp Greenleaf
Sproesser, Lt. T. W.....	Bn. 7, Camp Greenleaf
Stahl, Lt. D. F.....	Co. 31, Bn. 7, Camp Greenleaf
Stanton, Lt. H. I.....	P. O. Box 523, Camp Greenleaf
Stoll, Lt. I. V.....	Co. 30, Bn. 7, Camp Greenleaf
Sturrock, Lt. A. P.....	Bn. 7, Camp Greenleaf
Talty, Capt. R. C.....	Bn. 7, Camp Greenleaf
Telford, Lt. R. A.....	Bn. 7, Camp Greenleaf
Thomas, Lt. J. J.....	Bn. 7, Camp Greenleaf
Tognotti, Lt. J. A.....	Co. 28, Bn. 7, Camp Greenleaf
Trout, Lt. O. H.....	Co. 30, Bn. 7, Camp Greenleaf
Viers, Lt. Carl.....	Bn. 7, Camp Greenleaf
Walker, Lt. L. V.....	Co. 28, Bn. 7, Camp Greenleaf
Ward, Lt. R. M.....	Bn. 7, Camp Greenleaf
Watson, Lt. E. E.....	Co. 29, Bn. 7, Camp Greenleaf
Weeden, Lt. H. B.....	Box 201, Camp Greenleaf
Weir, Lt. Jesse.....	Co. 31, Bn. 7, Camp Greenleaf
Weires, Lt. P. A.....	Co. 28, Bn. 7, Camp Greenleaf
Weldishofer, Lt. W. M.....	Box 500, M. O. T. C., Camp Greenleaf
Wentworth, Lt. J. E.....	Bn. 7, Camp Greenleaf
Wessels, Lt. Geo.....	Co. 31, Bn. 7, Camp Greenleaf
Wilhoit, Lt. C. R.....	Co. 29, Bn. 7, Camp Greenleaf
Wicktor, Lt. C. E.....	Co. 28, Bn. 7, Camp Greenleaf
Wilkins, Lt. W. I.....	Co. 29, Bn. 7, Camp Greenleaf
Williams, Lt. D. K.....	Co. 29, Bn. 7, Camp Greenleaf
Williams, Lt. E. E.....	Co. 29, Bn. 7, Camp Greenleaf
Wilson, Lt. C. B.....	Co. 30, Bn. 7, Camp Greenleaf
Wood, Lt. C. E.....	Co. 29, Bn. 7, Camp Greenleaf
Woods, Lt. C. W.....	Co. 29, Bn. 7, Camp Greenleaf
Wooters, Lt. H. S.....	Co. 29, Bn. 7, Camp Greenleaf
Worrell, Lt. Geo.....	Bn. 7, Camp Greenleaf
Yocom, Lt. E. J.....	Co. 30, Bn. 7, Camp Greenleaf

ILLINOIS

Allen, Frank E.....	4201 Berkeley Ave., Chicago
Arndt, H. F.....	3953 Michigan Ave., Chicago
Bashford, O. D.....	3825 Linden Ave., East St. Louis
Bateman, W. C.....	Sullivan
Benjamin, F. H.....	6732 Loomis St., Chicago
Bryan, H. E.....	Sparta
Beckett, B. W.....	4081 Oakland-Crescent St., Chicago
Blount, S. L.....	B. A. I., Dept. of Agri., National Stock Yards
Brown, F. E.....	Blandinsville
Bunn, T. L.....	4201 Berkeley Ave., Chicago
Bovett, J. A.....	2805 Indiana Ave., Chicago
Brankin, T. P.....	Federal Bldg., Freeport
Burgess, S. H.....	Tonica
Clarno, H. T.....	Farmer City
Colson, C. F.....	1136 E. 47th St., Chicago

Conard, A. J.	957 N. Lawndale Ave., Chicago
Cook, J. D.	544 Veronica Ave., East St. Louis
Crans, M. L.	3801 N. Linden Ave., East St. Louis
Crowe, T. B.	2624 Indiana Ave., Chicago
Debold, W. O.	1010 E. 43d St., Chicago
Drayer, J. H.	A. R. D., Camp Grant
Edwards, A. C.	914a St. Clair Ave., East St. Louis
Erfurth, E. F.	3615 Iron St., Chicago
Gansel, B. E.	717 N. 9th St., East St. Louis
Grabb, E. A.	Bethany
Graham, C. R.	Exch. Bldg., National Stock Yards
Griffin, C. E.	Armstrong
Halsey, F. D.	1123 Kansas Ave., East St. Louis
Harmening, A. H. F.	2120 Sedgwick St., Chicago
Hastings, C. C.	Williamsville
Houchins, J. R.	3615 Iron St., Chicago
Householder, E. B.	Bement
Hagedorn, J. C.	6422 Blackstone Ave., Chicago
Handley, Lt. J. A.	3615 Iron St., Chicago
Huggins, M. J.	404 Spring St., Springfield
Hannon, Jos.	2227 N. Racine Ave., Chicago
Hauer, W. H.	4201 Berkeley Ave., Chicago
Hess, G. W.	4322 Emerald Ave., Chicago
Quinlan, J. E.	7844 Peoria St., Chicago
Hopkins, L. T.	R. R., Pleasant Hill
Jennings, J. E.	National Stock Yards
Johnson, E. M.	6639 Justine St., Chicago
Johnston, W. A.	501 W. Adams, Taylorville
Jones, T. K.	Athens
Kerr, C. L. E.	B. A. I., National Stock Yards
Krichel, J. H.	A. R. D., 321, Camp Grant
Larkin, Mark.	B. A. I., National Stock Yards
Lehman, C. L.	Flanagan
Linde, C. A.	5802 Wentworth Ave., Chicago
Lintner, J. J.	6208 Blackstone Ave., Chicago
Lorton, R. D.	4201 Berkeley Ave., Chicago
Loveland, C. A.	336 S. 43d St., Chicago
Makin, A. I.	B. A. I., National Stock Yards
Mampreian, C. G.	502 W. 45th St., Chicago
Morin, L. N.	McLean
Montgomery, W. A.	226 N. Hamlin Ave., Chicago
Martinson, V. V.	1010 E. 43d St., Chicago
Morin, L. H.	Waynsville
Hittle, R. E.	812 E. Monroe St., Bloomington
McDonald, Jas.	404 Spring St., Springfield
Meisner, F. C.	Glen Ellyn
Maloney, A. J.	1529 Gaty Ave., East St. Louis
Milligan, S. C.	602 Cahokia Bldg., East St. Louis
Myers, W. A.	Wenona
McFarland, J. D.	5801 Indiana Ave., Chicago
Noonan, A. J.	5504 S. Green St., Chicago
Nutt, R. H.	Drovers National Bank Bldg., Chicago
Nye, C. H.	Cambridge
Oltmanns, J. W.	Watseka
Okershauser, R. F.	5519 Kenwood Ave., Chicago
Pauly, C. F.	Blue Mound
Page, F. A.	7349 Union Ave., Chicago
Patch, F. G.	Roseville
Paul, A. F., Jr.	5946 Parnell Ave., Chicago
Pederson, P. T.	Barrington
Pickett, R. A.	B. A. I., National Stock Yards
Pieper, G. C.	Route 1, Granite City
Powell, J. S.	710 N. 8th St., East St. Louis

Quincy, T. E.	6347 Yale Ave., Chicago
Rinehart, H. C.	Rushville
Reamsnyder, F. J.	4751 Calumet Ave., Chicago
Shelton, J. T.	706 E. 51st St., Chicago
Stricker, C. L.	B. A. I., National Stock Yards
Stuck, D. F.	2022 N. 19th St., East St. Louis
Snyder, C. T.	1609 Hall St., East St. Louis
Stewart, L. C.	U. S. Dept. of Agri., National Stock Yards
Stewart, W. D.	1110 E. 42d Pl., Chicago
Taggart, J. W.	3316 Lake Park Ave., Chicago
Thigpen, Chas.	3615 Iron St., Chicago
Thurmon, F. S.	B. A. I., National Stock Yards
Tiedebohl, T. C.	6037 Woodlawn Ave., Chicago
Tierney, D. D.	9100 Hamilton Ave., Chicago
Van Der Veen, H. E.	3615 Iron St., Chicago
Wattenberg, J. G.	B. A. I., National Stock Yards
Welch, F. M.	6428 Dante Ave., Chicago
Whalen, J. H.	3750 W. 63d Pl., Chicago
White, H. A.	Wyoming
Winters, O. W.	Arthur
Wirthlin, J. R.	4335 Emerald Ave., Chicago
Word, Lt. N. E.	3339 Michigan Ave., Chicago

INDIANA

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Hyde, Roscoe	R. F. D. 3, Brookville
Kirch, L. P.	315 Sanders St., Indianapolis
Boyer, H. Justine	831 N. Alabama St., Indianapolis
LaMar, D. A.	105 N. Davidson St., Indianapolis
Magley, L. K.	Decatur
Mull, A. A.	Rushville
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Shealy, A. L.	Purdue University, Lafayette
Shoemaker, J. H.	105 N. Davidson St., Indianapolis
Wood, R. E.	Rockville
Worsham, Lt. J. C.	Quartermaster Dept., Jeffersonville

IOWA

Bailey, C. D.	207 W. Madison St., Washington
Breckerbaumer, H. E.	211 22d St., Sioux City
Bennett, A. W.	3610 6th Ave., Sioux City
Bolton, J. C.	642 Walnut St., Waterloo
Bower, H. C.	1172 Main St., Dubuque
Breckenridge, W. K.	313 Albany St., Ottumwa
Briggs, R. J. W.	Iowa Falls
Byrnes, R. C.	Traer
Beaumont, L. C.	Britt
Benbrook, E. A.	2823 Leek St., Ames
Buck, A. P.	2118 Story St., Boone
Byerley, J. H.	1726 E. Walnut St., Des Moines
Cole, C. G.	Iowa State College, Ames
Couch, O. J.	Remount Depot, Camp Dodge
Covault, C. H.	Iowa State College, Ames
Copland, F. B.	Logan
Combs, E.	230 Exchange Bldg., Sioux City
Campbell, R. H.	Blockton
Coleman, H. M.	Moorehead
Crosby, J. F.	Camp Hdqrs., Camp Dodge
Davis, R. E.	Ft. Dodge Serum Co., Ft. Dodge

Dawson, A. J.	Regt. Hosp., 351st Inf., Camp Dodge
Derivan, J. F.	care of Div. Surgeon, Camp Dodge
Dodd, W. E.	18 Federal Bldg., Des Moines
Drach, A. C.	33 Federal Bldg., Ft. Dodge
Dunn, E. G.	108 S. Madison St., Mason City
Engelbert, E. B.	Remount Depot, Camp Dodge
Evans, C. S.	1811 George St., Sioux City
Enger, O. M.	Rm. 18, Federal Bldg., Des Moines
Feuring, C. R.	1116 Mulberry St., Waterloo
Frakes, W. H.	Maquoketa
Francoise, W. I.	B. A. I., Sioux City
Franks, C. C.	Grimes
Getz, L. M.	310 Walnut St., Atlantic
Gillette, G. H.	108 E. Court St., Ottumwa
Glenn, J. C.	Norway
Gordon, W. M.	3605 6th Ave., Sioux City
Gilchrist, W. D.	413 S. 16th St., Cedar Rapids
Hunter, R. B.	Castana
Hasenmiller, F. H.	607 W. 2d St., Davenport
Hogan, Lt. L. J.	Farley
Hagerty, H. J.	5th and Clay Sts., Dubuque
Haggerty, L. V.	3812 Stone Ave., Sioux City
Hall, H. W.	627 N. Federal Ave., Mason City
Hawthorne, G. A.	Clarinda
Hewitt, E. A.	Vet. Division, Ames
Johnston, H. E.	Creston
Jones, L. L.	337th F. A., Camp Dodge
Jorgenson, G. E.	Clermont
Keith, C. L.	New Market
Kellogg, L. W.	Hull
Lumb, J. W.	1007 Nebraska St., Sioux City
Lauman, F. J.	3412 7th Ave., Sioux City
Leary, J. W.	813 7th St., Sioux City
Lawrence, H. J.	2137 S. Lemon St., Sioux City
Lefler, H. P.	714½ N. 15th St., Fort Dodge
Ludgate, Francis	1416 4th Ave., N., Fort Dodge
McCabe, T. J.	Williamsburg
McCray, F. W.	1009 Newton St., Sioux City
Milner, C. A.	1809 S. Lemon St., Sioux City
McNamara, Lt. J. B.	Remount Depot, 322, Camp Dodge
McNutt, S. H.	259 Hyland Ave., Ames
McMillan, H. L.	Belle Plaine
Montgomery, Jno.	Anamosa
Moon, Lt. G. W.	337th F. A., Camp Dodge
Murray, Chas.	103 S. Hyland Ave., Ames
Nelson, S. K.	313th Train Hdqrs., Camp Dodge
Orr, H. W.	3003 West St., Ames
Olson, Carl	Sac City
Parrish, G. M.	175th Inf. Brigade, Camp Dodge
Pinkerton, H. E.	Rm. 230 Exch. Bldg., Sioux City
Ross, W. G.	3928 Orleans St., Sioux City
Ries, S. L.	426 E. 4th St., Ottumwa
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Steiner, A. J.	Iowa State College, Ames
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Smith, A. L.	1009 Newton St., Sioux City
Schuler, C. A.	3731 6th Ave., Sioux City
Schwab, M. E.	627 N. Federal Ave., Mason City
Steele, M. L.	Harlan
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Schroeder, A. J.	Eldredge
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Vermillion, L. B.	1310 Burch Ave., Cedar Rapids
Whipple, G. E.	230 Exchange Bldg., Sioux City
Wilson, J. M.	Winnfield
Winnes, C. L.	Rath Packing Co., Waterloo
Wilson, F. M.	Mechanicsville
Yenner, B. H.	Ottumwa

KANSAS

Alvey, W. C.	3715 Metropolitan Ave., Kansas City
Bailey, A. L.	23 Federal Bldg., Kansas City
Beattie, F. S.	214 West St., Iola
Bower, C. W.	Hope
Boyce, N. V.	610 Sandusky Ave., Kansas City
Bromell, G. W.	1611 Garfield Ave., Kansas City
Burgett, J. L.	2132 N. 27th St., Kansas City
Cassell, A. F.	Beverly
Core, J. L.	416 Washington Blvd., Kansas City
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Erfurth, O. A.	1324 Cleveland, Kansas City
Flanagan, Asa.	Wakefield
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Gaston, W. N.	Arnold Hall, Ft. Riley
Griffths, C. B.	Baileyville
Hammers, L. A.	Clearwater
Herchenroeder, F. L.	23 Federal Bldg., Kansas City
Hofferd, R. M.	92d Div., Vet. Detail, Ft. Riley
Honeywell, C. H.	K. S. A. C., Manhattan
Holm, R. E.	Rm. 29, Live Stock Exchange, Wichita
Huston, O. B.	2016 Jackson Ave., Wichita
Imler, F. A.	20 Federal Bldg., Kansas City
Jameson, E. F.	832 Fauromer Ave., Kansas City
Kilian, E. H.	214 Pierre St., Manhattan
Kirkpatrick, J. I.	Sedgwick
Krenek, R. F.	B. A. I., Kansas City
Lemery, A. A.	1910 Central Ave., Kansas City
McCroppin, C. R.	20 Federal Bldg., Kansas City
McGuire, M. W.	729 Stewart Ave., Kansas City
Poelma, L. J.	Arnold Hall, Ft. Riley
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Ranne, C. E.	1611 Garfield Ave., Kansas City
Scheloski, C. M.	835 Shawnee Ave., Kansas City
Shannon, J. V.	Morrill
Smith, W. A.	1952 N. 17th St., Kansas City
Sorenson, S. C.	Tescott
St. Clair, F. P.	23 Federal Bldg., Kansas City
Strodtman, O. E.	22 Federal Bldg., Topeka
Taylor, B. A.	54 S. 17th St., Kansas City
Thompson, J. B.	410 Parallel Ave., Kansas City
Trittle, F. L.	23 Federal Bldg., Kansas City
Wedemeyer, E. V.	23 Federal Bldg., Kansas City
Wilson, C. P.	M. O. T. C., Vet. Section, Ft. Riley
Wood, J. W.	411 N. 12th St., Kansas City

KENTUCKY

Biles, W. F.	Frankfort
Bratten, F. W.	325th F. A., West Point
Edwards, J. R.	Aux. Remount Depot, 319, Camp Taylor
Fisher, C. W.	117 S. 4th St., Danville

Horton, G. M.	Mt. Sterling
Place, G. S.	Aux. Remount Depot, 319, Camp Taylor
Pontius, R. T.	Exp. Station, Lexington
Quinn, M. A.	A. R. D., 319, Camp Taylor
Ryle, Kenneth	Frankfort
Bard, Guy	2031 Alta Ave., Louisville
Bond, S. L.	524 Custom House, Louisville
Butz, H. W.	2765 Long Ave., Louisville
Jones, F. B.	322 Raymond Ave., Louisville
Myers, H. H.	936 S. 5th St., Louisville
Titus, A. J.	Rm. 524 Custom House, Louisville
Winters, Raymond	A. R. D., 319, Camp Taylor

LOUISIANA

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Branigan, C. P.	De Ridder
Brand, Theodore	Rayville
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Golden, G. E.	253 9th St., Baton Rouge
Gray, W. J.	Houma
Guilfoyle, H. N.	New Iberia
Harris, V. H.	Gen. Del., Lafayette
Jargo, L. N.	603 Roumain Bldg., Baton Rouge
Louden, G. R.	Box 61, Oberlin
Love, J. R.	603 Roumain Bldg., Baton Rouge
McCoy, C. M.	603 Roumain Bldg., Baton Rouge
Maxwell, C. B.	Plaquemine
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Murphy, E. E.	Franklin
Olson, Sigurd	Benton
Orchard, P. J.	115 Main St., Baton Rouge
Prescott, A. T., Jr.	739 North St., Baton Rouge
Rafnel, R. V.	939 N. Blvd., Baton Rouge
Sevy, Claude	Covington
Smith, J. M.	Crowley
Smith, R. L.	603 Roumain Bldg., Baton Rouge
Spackman, E. P.	P. O. Box 465, Alexandria
Springstun, M. V.	Denham Springs
Upton, J. R.	115 Main St., Baton Rouge
Ward, C. A.	Box 214, Lake Charles
Warren, R. E.	201 Linden St., Hammond
Webster, Chas.	Box 301, Marksville
Yoder, J. H.	Jonesboro

MAINE

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Caughlin, D.	Exchange Hotel, Houlton
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MARYLAND

Arnold, I. H.	Remount Depot, Camp Meade
Brown, W. J.	Frederick
Campbell, G. F.	A. R. D., 304 Camp Meade
Cass, P. J.	147 W. Washington St., Hagerstown
Ernest, L. B.	Connecticut Ave. and Baltimore St., Kensington
Herbert, W. L.	A. R. D., Camp Meade
Keller, F. M.	404 N. Castle St., Baltimore
Mann, Bernard	A. R. D., 304, Camp Meade
Melody, G. C.	Oakland
Neidigh, M. W.	Remount Depot, Camp Meade
Runnells, R. A.	A. R. D., 304, Camp Meade

Reeder, W. C.....Rising Sun
 Smallbone, G. E. M.....A. R. D., 304, Camp Meade
 Trapkey, C. A.....A. R. D., 304, Camp Meade

MASSACHUSETTS

Ash, J. J.....24 Walnut St., Somerville
 Brock, R. O.....15 Clyde Rd., Watertown
 Brown, H. E.....Springfield, Brightwood
 Creedon, P. J.....509 Grafton St., Worcester
 Crossman, E. A.....73 Dedham Ave., Needham
 Fetter, G. E.....71 Commonwealth Rd., Watertown
 Fitzpatrick, A. C.....8 Forest St., Cambridge
 Hill, H. N.....32 Lunning St., Hyde Park, Boston
 Pierce, J. D.....47 High St., Springfield
 Pugh, H. C.....302d F. A., Camp Devens
 Ryder, J. F.....Custom House Bldg., Boston
 Smart, J. J.....50 Columbus Ave., Somerville
 Zimmerman, I.....care of Springfield Prov. Co., Springfield

MICHIGAN

Ackerson, J. L.....Milan
 Blue, Maurice.....A. R. D., 320, Camp Custer
 Curtice, A. B.....31 Ferris St., Hillsdale
 Fess, F. J.....567 Dragoon Ave., Detroit
 Hanson, F. W.....A. R. D., 320, Camp Custer
 Lynch, D. J.....A. R. D., 320, Camp Custer
 Marks, David.....347 Hendrie St., Detroit
 Newton, H. N.....Old State Block, Lansing
 Rader, W. A.....1268 Theodore St., Detroit
 Rath, R. B.....160th Depot Brig., Camp Custer
 Stafseth, H. J.....A. R. D., Camp Custer
 Zeltzer, J. E.....410 Pallister Ave., Detroit
 Shore, Lt. C. B.....A. R. D., 320, Camp Custer
 Splan, C. E.....15 E. Woodbridge St., Detroit

MINNESOTA

Lynch, G. P.....Montevideo

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Arnold, T. F.....5077 Vernon Ave., St. Louis
 Berry, E. H.....Eldon
 Barr, W. A.....8th and Garden St., St. Joseph
 Bunting, E. B.....422 Lee St., St. Joseph
 Brown, H. P.....2230 Felix St., St. Joseph
 Curry, H. E.....3746 Highland Ave., Kansas City
 Collins, H. R.....532 E. Missouri Ave., St. Joseph
 Cary, E. J.....500 Live Stock Exchange, Kansas City
 Cary, E. F.....1705 E. 36th St., Kansas City
 Cock, J. H.....3709 Agnes St., Kansas City
 Cooper, D. G.....5902 Walnut St., Kansas City
 Clement, C. B.....3503 Wyoming St., Kansas City
 Cooper, J. D.....4416 Fairmount Ave., Kansas City
 Cowherd, C. M.....4541 Chouteau Ave., St. Louis
 Divelbiss, W. P.....402 S. Main St., Clinton
 Dolan, J. T.....3430a McKean Ave., St. Louis
 Ettling, C. C.....3606 College Ave., Kansas City
 Everly, G. P.....2605 Duncan St., St. Joseph
 Frye, F. C.....1948 Calhoun St., St. Joseph
 Faunce, A. L.....2740 Tracy Ave., Kansas City
 Glover, E. K.....317 Argyle Bldg., Kansas City
 Gross, Lt. Fred.....5907 Lake Ave., St. Joseph
 Grunwold, C. H.....1506 S. 25th St., St. Joseph
 Haynie, E. H.....602 Independence Ave., St. Joseph
 Hartmann, G. R.....2712 N. 21st St., St. Louis
 Hawley, H. W.....Rm. 800, Exchange, Kansas City
 Huston, J. W.....724 Bennington Ave., Kansas City

Kellogg, E. A.	1125 Ridenbaugh St., St. Joseph
Mutziger, G. J.	425 Lee Ave., Sta. D., St. Joseph
McNally, H. R.	2816 Monterey St., St. Joseph
Mayes, J. M.	1923 Lawn Ave., Kansas City
Newberg, Aaron	2518 Harrison St., Kansas City
Newman, R. R.	3015 Bartold Ave., Maplewood
Oosten, R. Y.	809 S. Vandeventer Ave., St. Louis
Park, J. F.	Box 42, West Plains
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Pickett, Theo.	3304 Chestnut St., Kansas City
Rathman, G. A.	1535 Chelsea, Kansas City
Sappington, M. A.	3323 Montgall Ave., Kansas City
Stingley, O. A.	1317 E. 29th St., Kansas City
Swim, B. H.	4435 Scarritt Ave., Kansas City
Schaefer, E. H.	3215 Anderson Ave., Kansas City
Sanders, C. L.	5149a Page Ave., St. Louis
Spillman, F. L.	215 E. Calo. Ave., St. Joseph
Timmerman, H. J.	4121a Hartford St., St. Louis
Tyler, D. A.	5717 Troost Ave., Kansas City
Underwood, C. S.	130 S. White Ave., Kansas City
Ward, E. B.	Lebanon
Woodring, F. R.	402 9th St., Chillicothe
Wright, C. H.	3017 Cherry St., Kansas City
Walch, L. I.	4823 King Hill Ave., St. Joseph
Wright, J. B.	Live Stock Exchange, South St. Joseph

MISSISSIPPI

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NEBRASKA

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Burke, E. W.	4611 S. 25th St., South Omaha
Clark, J. S.	4526 S. 22d St., Omaha
Corbet, H. T.	3328 S. 24th St., Omaha
Draper, Jno. T.	4115 S. 24th St., Omaha
Edgecomb, Guy	4611 S. 25th St., South Omaha
English, Andrew	3809 S. 23d St., South Omaha
Franz, J. L.	2111 Martha St., Omaha
Frederick, L. D.	4310 S. 23d St., Omaha
Griest, H. L.	4201 S. 20th St., South Omaha
Gjertson, A. G.	4418 S. 21st St., South Omaha
Harper, B. E.	Hooper
Hayward, C. J.	4310 S. 23d St., Omaha
Himsel, Edw.	2820 F St., South Omaha
Johnson, H. S.	Box 343, Central City
Kern, E. W.	Care of Claremont Inn, Omaha
Kline, G. J.	4228 S. 21st St., Omaha
Melchiorson, W. G.	3609 S. 28th St., Omaha
Murdoch, J. W.	3810 S. 23d St., South Omaha
Perry, A. M.	2005 J St., South Omaha
Roome, Henry	4216 S. 22d St., Omaha
Robertson, W. M.	4212 S. 22d St., Omaha
Ruck, M. A.	4426 S. 20th St., Omaha
Smith, A. R.	2615 D St., South Omaha
Stoug, G. C.	1904 H St., South Omaha
Sullivan, S. E.	4831½ S. 24th St., South Omaha
Taylor, B. P.	3613 S. 28th St., South Omaha

Taylor, G. T.....	524 N. 33d St., Omaha
Trump, D. E.....	Utica
Vermillion R. C.....	2308 E St., South Omaha
Young, C. J.....	3814 S. 27th St., Omaha
Zumwalt, A. R.....	4428 S. 22d St., Omaha

NEW JERSEY

Arnold, Lt. J. F.....	80th F. A., Camp Merritt
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Herron, Lt. J. M.....	Bordentown
Jenison, J. S.....	20 Federal Bldg., Jersey City
McBride, Archibald.....	24 Federal Bldg., Paterson
Mann, M. K.....	Bloomsbury
Mosher, L. A.....	Camp Veterinarian, Camp Dix
Sheff, W. R.....	A. R. D., Camp Dix
Shreck, Horst.....	A. R. D., Camp Dix
Schoudan, Theodore.....	A. R. D., Camp Dix
Pardue, J. J.....	250 S. Burnett St., East Orange
Pinkerton, F. E.....	Frenchtown
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NEW MEXICO

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NEVADA

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Wright, L. H.....	University of Nevada, Reno

NEW YORK

Baum, H. F.....	193 S. 9th St., Brooklyn
Baxter, L. E.....	241 Decatur St., Brooklyn
Bicks, Nathan.....	518 E. Houston St., New York City
Biederman, C. R.....	1852 63d St., Brooklyn
Chase, J. M.....	96 Indian Church Road, Buffalo
Claris, H. W.....	629 Clinton St., Buffalo
Doyle, M. J.....	1817 Morris Ave., Bronx
Dunkel, J. D.....	50 Harrison St., New Rochelle
Danziger, Max.....	149 Clinton Ave., Brooklyn
Elson, R. E.....	Vet. Camp, Camp Upton, Long Island
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Easen, Thos.....	323 W. 34th St., New York
Faulder, E. T.....	69 Monticello Ave., Buffalo
Feld, Emanuel.....	104 W. 42d St., New York
Gardner, C. A.....	50 Granite St., Brooklyn
Glynn, F. J.....	Chester
Gogerty, J. D.....	129 S. 12th Ave., Mt. Vernon
Grossman, I. M.....	409 Spencer Trask Bldg., Albany
Habecker, I. N.....	116 30th St., Woodcliff
Halkin, I. H.....	1426 Clinton Ave., Bronx
Henning, Henry.....	530 E. 17th St., New York
Jacobs, Jos.....	65 E. 106th St., New York
Ives, L. D.....	109 Sterling St., Brooklyn
Jansen, J. F.....	Care Depot Q. M., 39 Whitehall St., New York
Johnson, G. M.....	159 W. 126th St., New York
Kay, A. W.....	267 Moffatt St., Brooklyn
Kock, Hermann.....	57 Bushwick Ave., Brooklyn

Koten, L. R.....	491 E. 140th St., New York
Leonard, H. D.....	122 State St., Albany
Long, Albert.....	144 Decatur St., Brooklyn
Lyon, B. M.....	Pearl River
Manz, Wm.....	620 E. 158th St., New York
McAustin, David.....	1632 E. 12th St., Brooklyn
Miller, .F. H.....	146 W. 54th St., New York
Moore, E. V.....	Brookton
Mullings, R. M.....	Depot Q. M., 39 Whitehall St., New York
Murphy, M. J.....	348 W. 118th St., New York
Olding, F. R.....	50 Granite St., Brooklyn
Porteus, J. R.....	care Y. M. C. A., New York
Pohl, Emil.....	46 Floss Ave., Buffalo
Ring, E. S.....	88 Hicks Pl., Woodside, Long Island
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Rothang, Christian.....	Sea Cliff, Long Island
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Serling, J. L.....	168 Suffolk, St., New York
Stafford, E. C.....	R. F. D. 2, Cortland
Steckel, L. M.....	51 Chambers St., New York
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Yager, E. P.....	Washington

NORTH DAKOTA

Bernhardt, R. W.....	Enderlin
Cohenour, H. H.....	Bismarck
Ewen, L. C.....	Mayville
Hollenbeck, J. B.....	Bismarck
Miles, J. V.....	Ellendale

OHIO

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Bamber, S. D.....	1322 W. 51st St., Cleveland
Bontrager, C. F.....	3066 W. 101st St., Cleveland
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Carey, G. A.....	West Milton
Conn, G. H.....	636 E. State St., Fremont
Engard, P. T.....	120 N. Court St., Marysville
Engelhart, P. T.....	120 N. Court St., Marysville
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Finn, Lt. Jas. A.....Vinito
Houston, W. H.....Fort Reno
Jones, T. A.....	215 Exchange Bldg., Oklahoma City
Kidder, H. R.....	.....Ponca City
Ludwig, H. T.....	101 E. 3d St., Oklahoma City
Mahan, A. R.....	215 Exchange Bldg., Oklahoma City
Meredith, S. M.....	1740 W. 11th St., Oklahoma City
Meads, E. W.....	.....care F. F. Meads, Cherokee
Michel, H. A.....	300½ N. Reno, Oklahoma City
Orendorff, C. E.....	.....Byron
Otey, D. S.....	.....Poteau
Osborn, C. R.....	118½ N. 3d St., Chickasha
Pryor, F. C.....Wewoka
Roscoe, H. A.....Oklahoma City
Scott, W. R.....Sulphur
Sutherland, R. C.....	Box 441, Hobart
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OREGON

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PENNSYLVANIA

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Anderson, A. R.....	742 Kennedy Ave., Johnstown
Andress, W. R.....	1128 Wagner Ave., Philadelphia
Baker, E. A.....	.....Bloomsburg
Brim, P. F.....	1824 Arch St., Philadelphia
Behney, J. E.....	.....Fredericksburg
Colflesh, J. H.....	.....Confluence
Curley, E. M.....	.....Tremont
Cooke, W. A., Jr.....	1247 N. 28th St., Philadelphia
Edelman, F. J.....	151 Main St., Bath
Fegley, N. K.....	.....Emans
Fox, W. W.....	.....Hummelstown
Hartenstein, F. H.....	.....New Freedom
Hartman, J. D.....	6705 Lansdown Ave., Philadelphia
Hassel, Chester.....	3601 Walnut St., Philadelphia
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Hyde, Andrew.....	419 S. 63d St., Philadelphia
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Johnston, S. H.....	3729 N. 15th St., Philadelphia
Keck, M. W.....	746 Main St., Slatington
Kimball, V. G.....	39th and Woodland Ave., Philadelphia
Keiter, C. F.....	114 Ardmore Ave., Philadelphia
Lutes, Emory.....	241 S. Main St., Wilkes-Barre

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Martien, H. D.....	4054 Pouelton Ave., Philadelphia
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Mayer, F. B.....	Canton
Miller, F. B.....	Brooklyn
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O'Leary, J. P.....	207 E. Ridley Ave., Ridley Park
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Romig, F. C.....	Beaver Springs
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White, Thos.....	1210 S. 28th St., Philadelphia
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RHODE ISLAND

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SOUTH CAROLINA

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Boyd, Z. C.....	Walterboro
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Gallagher, P. J.....	Columbia
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SOUTH DAKOTA

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Horstman, A. W.....	606 Flatiron Bldg., Ft. Worth

Jones, F. R.	602 Flatiron Bldg., Ft. Worth
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Combs, A. W. 1st Reserve Supply Train, A. P. O. 708, A. E. F.
 Edwards, Maj. T. H. Div. Vet., 87th Div., A. E. F.
 Martin, Lt. J. J. 341st F. A., A. E. F.
 Perdue, H. S. care Chief Surgeon, A. E. F.
 Ratigan, W. J. Vet. Hosp. 9, A. E. F.
 Sharp, F. S. care Chief Surgeon, A. E. F.
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 Whittlesey.
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IOWA—H. D. Bergman, Lloyd E. Foster, J. D. Grossman, H. H. Havner, G. H. Johnson, J. S. Koen, H. S. Murphy, C. H. Stange, R. D. Wall, I. D. Wilson.

KANSAS—Jas. Fleming, L. M. Goss, B. M. Murphy, G. M. Potter, Jos. P. Scott, A. Trickett.

KENTUCKY—S. F. Musselman, R. T. Pontius, Francis O. Schneider, D. E. Westmorland.

LOUISIANA—W. H. Dalrymple.

MARYLAND—R. H. Forsythe, J. Huebschmann, Frank M. Keller, C. E. Poe, R. C. Reed, W. C. Reeder, E. C. Schroeder, Hulbert Young.

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MASSACHUSETTS—E. R. Brackett, B. F. Calley, W. H. Dodge, Wm. J. Hennessey, W. S. Plaskett, Benj. D. Pierce, L. A. Paquin, J. M. Robinson, Warren L. Thayer, J. W. Winchester, Wm. T. White.

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MINNESOTA—Chas. E. Cotton, Wm. C. Prouse, M. H. Reynolds, S. H. Ward.

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NORTH CAROLINA—O. H. Graham, G. A. Roberts.

NORTH DAKOTA—H. L. Foust.

OHIO—W. A. Axby, L. P. Beechy, C. H. Case, A. S. Cooley, H. L. Durby, W. O. McHugh, H. D. Sheeran, E. H. Shepard.

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SOUTH DAKOTA—John T. E. Dunwoodie.

VIRGINIA—H. H. Adair, H. Bannister, W. G. Chrisman, J. G. Ferneyhough, Thos. Fraser, W. T. Gilchrist, H. Clayton Moyon, Capt. P. F. Wallingford.

WEST VIRGINIA—S. E. Hershey, L. N. Reefer.

WISCONSIN—O. H. Eliason, S. J. Walkley.

84th DIV., U. S. A.—Major G. A. Hauvy.

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NEW YORK—Mrs. F. W. Andrews, Miss Nellie Berns, Miss Elise De Ronde, Mrs. A. Eichhorn, Mrs. W. E. Frink, Mrs. S. A. Goldberg, Mrs. A. G. Hall, Mrs. W. Horace Hoskins, Miss Marion Hamilton, Mrs. Leland D. Ives, Mrs. B. M. Lyon, Mrs. David McAustin, Mrs. Edward Rafter, Mrs. Cassius Way.

NORTH DAKOTA—Mrs. H. L. Foust.

RHODE ISLAND—Mrs. Thos. E. Robinson.

SOUTH CAROLINA—Mrs. F. P. Caughman, Miss M. E. McInnes.

TENNESSEE—Mrs. B. Mehard.

VIRGINIA—Mrs. H. Bannister and daughter.

WEST VIRGINIA—Mrs. S. E. Hershey, Miss Mae Hershey, Miss Lola Sharpless.

CANADA—Mrs. J. A. Campbell.

VISITORS.

DELAWARE—Morris Zurkow

ILLINOIS—L. C. Brenner.

MASSACHUSETTS—Jesse A. Viles.

MICHIGAN—Leonard P. Hoskins.

MISSOURI—C. V. Haver, Albert Smith Kinsley.

PENNSYLVANIA—H. W. Allyn, Edwin Abramsen, Clarence Bley, T. S. Carlisle, H. C. Campbell, P. P. Gheen, Bery Gunner, Chas. J. Gery, Jno. J. Graham, G. G. Gil, James C. Horner, F. J. Maurer, R. H. Mooney, J. F. Russell, Jr., S. E. Weber.

WEST VIRGINIA—Jos. Hershey.

A CORRECTION.

In the Secretary's report, page 172 of the November Journal, it was stated that the number of applicants for 1918 was 800.

Dr. Day, former Acting Secretary, now informs the Journal that the report at first submitted was written a few days before the Philadelphia meeting, and that afterwards quite a number of applicants were received. The exact number that were elected to membership in the Association was 1,017, instead of 800, as previously stated.

OTHER ASSOCIATIONS.

WESTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION.

The fall meeting of the Western Michigan Veterinary Medical Association was held on Friday, October 4, at Hotel Holland, Holland, Ottawa County, Michigan, with a good attendance present. Four new members were admitted to the association.

The afternoon session was opened by a very interesting talk by Dr. Watson, of B. A. I., Kalamazoo, on "Hog Cholera Control in Michigan." Mr. A. Bental, Agricultural Agent, Allegan County, was present, and some steps were taken to improve the usefulness of his office, both to the laity and the veterinary profession in the county, by inviting the veterinarians to take part in farmers' institutes held in the counties.

Drs. M. E. Elinga, S. Tacoma and Neinhuis talked on complications of retained placenta and its relations to calf scours and calf pneumonia, and the treatments, which proved very instructive to all.

The remainder of the afternoon was spent at the factory of the Veterinary Specialty Company, where working models of operating tables, stocks, etc., were demonstrated to all by Mr. Olinger, the manager. All reported the factory's output and models the best ever seen, and the trip was of interest to all.

O. H. VAN BRUSSEL,
Secretary and Treasurer.

BRITISH COLUMBIA VETERINARY ASSOCIATION.

The eleventh annual meeting of the British Columbia Veterinary Association was held in the assembly hall of the B. C. University at Vancouver, B. C., on October 5, 1918, and the program was as follows:

A visit to the permanent site of the university, at Point Grey, where a start is being made in laying out the grounds and the erection of buildings, a modern dairy barn being just completed.

On Saturday a public meeting was held, at which the gen-

eral public was invited, also leading stock breeders and dairymen were sent special invitations.

The speakers were Dr. Thomson of Keremeos, who read a paper on the necessity for rural meat inspection by a system of communal slaughter houses, where all animals for food would be slaughtered under inspection. The association has been trying to educate the public to the necessity for this for some time, and hopes to have another public meeting before the meeting of the Legislature, and to bring it to the notice of the Cabinet through the help of various public men, and we have asked the Government for assistance in publishing this and other papers, so that the consuming public may understand the dangers of eating uninspected meat. Considerable discussion followed.

The next paper was one by Dr. Howell on "Post-Parturient Diseases," and was well discussed. Then followed one by Dr. Jagger on the latest methods of treating and combating contagious abortion, of which subject he has made a special study. The dairymen were particularly interested in this, especially as to the cost of the same.

Dr. Bruce of Agassiz then read a paper on the poisonous plants of British Columbia. This is a subject that needs more attention paid to it, and Dr. Bruce has done a lot of careful work on it and showed numerous full-sized specimens, pressed and mounted, that he had gathered and identified.

After this meeting the general meeting of the association was held, Dr. S. F. Tolmie, M. P., our President, being in the chair. Dr. Tolmie gave us an address on the activities of the association during the past year, the steps taken to the formation of a Dominion Veterinary Advisory Board, and the appointment of Dr. C. D. McGillvray as head of the Ontario Veterinary College, and closed by asking that the members at large show more active interest in the affairs of the association.

Routine business followed, the financial statement not being as good as last year, though the receipts were larger, owing to the cost of publicity work in connection with the proposed rural meat inspection, the Secretary's honorarium was increased and a letter of thanks was ordered sent to the Dean of the University, thanking him for the use of the assembly hall.

Then followed the election of officers, which resulted as follows:

President—Dr. S. F. Tolmie.

Secretary and Treasurer—Dr. Kenneth Chester.

Council—Dr. A. Damman, Dr. J. W. Darby, Dr. W. Thomson, Dr. F. W. Ottewell, and Dr. L. D. Swenerton.

In the evening the association gave a banquet at the Hotel Vancouver, to which prominent stock breeders and dairymen were invited, together with the Dean and several professors of the university.

Dr. S. F. Tolmie was in the chair and appropriate toasts were proposed and responded to. This brought to a close a most successful annual meeting.

KENNETH CHESTER,
Secretary and Treasurer.

PHILIPPINE VETERINARY MEDICAL ASSOCIATION.

The Philippine Veterinary Medical Association held its annual meeting at Manilla, in February last, and had a five days' most interesting and instructive session, according to Dr. S. Youngberg, President of the association.

The association was welcomed by His Excellency Francis Burton Harrison, Governor-General of the Philippine Islands; and among the numerous interesting papers presented were the following:

Protozoölogy and Its Relation to Veterinary Medicine, by Professor Frank G. Haughwout, Chief, Department of Medical Zoölogy, University of the Philippines.

Necessity for Professional Coöperation, Dr. Stanton Youngberg, Professorial Lecturer, College of Veterinary Science.

Relation of the Department of Agriculture to the Veterinarian, Dr. Galicano Apacible, Secretary of Agriculture and Natural Resources.

Recent Investigations and Remarks on Rinderpest, Dr. W. H. Boynton, Dean, College of Veterinary Science.

Recent Nutritional Investigations on Maintenance and Growth, Dr. R. B. Gibson, Chief, Department of Physiology, College of Medicine and Surgery.

The University and the Future Veterinarian, Hon. Ignacio Villamor, President, University of the Philippines.

Animal Husbandry in the Philippines, Dr. A. S. Shealy, Chief, Animal Husbandry Division, Bureau of Agriculture.

Poisonous Plants in the Philippines, Dr. Elmer Drew Merrill, Professor of Botany and Chief of Botanical Division, Bureau of Science, Manilla.

Experiences in Private Practice in the Philippines, Dr. Victor Buencamino, Associate Professor of Veterinary Surgery, College of Veterinary Science.

In addition to the literary part of the program, the entertainment feature was not overlooked, and the meeting concluded with a sumptuous banquet.

The officers of the association elected for the ensuing year were as follows:

President—S. Youngberg.

Vice President—Victor Buencamino.

Secretary—Eustace S. D. Merchant.

Treasurer—Sixto Carlos.

CHICAGO BUREAU OF ANIMAL INDUSTRY ASSOCIATION.

The regular monthly meeting of the Chicago Association of Bureau of Animal Industry Veterinarians was held in their hall on Friday, November 8. There was an excellent attendance.

Dr. Robert Nutt read an unusually interesting paper on sausages, giving a list of the great variety that were manufactured, their composition, and method of manufacturing and curing. The different races from central Europe have their own special variety of sausage. There are scores of different sausages manufactured to meet demands. The ingredients of the sausages are all carefully inspected. They are made under the best sanitary conditions and furnish a palatable, nutritious and economical meat food.

Dr. J. Simpson read a paper on Texas fever, giving the important features of the disease and emphasizing the post-mortem lesions that should be looked for by inspectors in the slaughtering beds.

Dr. N. S. Mayo, guest of the Association, expressed the appreciation of the American Veterinary Medical Association for the cordial support given by the veterinarians of the B. A. I. He called attention to the fact that the Bureau of Animal Industry was in normal times the largest employer of expert veterinarians in America, and probably in the world.

The subject of Dr. Mayo's address was "Veterinary Tropical Experiences." He told of the difficulties encountered and the results obtained in the republic of Cuba. The lecture was illustrated by lantern slides giving glimpses of the tropics and tropical conditions.

COMMUNICATIONS.

To the Editor:

On page 72 of the October number of The Journal the School of Veterinary Medicine at the University of Pennsylvania is mentioned as one of the several schools which did not answer a questionnaire sent out by the Committee on Intelligence and Education. In order that the record may be complete, will you please state in your next issue that the questionnaire referred to was not received in the office of the school, and that, if it had been received, it would have been promptly filled out and returned to the committee?

WM. J. LENTZ, Acting Dean,
School of Veterinary Medicine,
University of Pennsylvania.

INTRA-DERMAL TUBERCULIN TEST.

Editor of the Journal:

I read with much interest the report by Dr. French of Wyoming on the intra-dermal tuberculin test, as used by him, in that state. Particularly do I note his remark, "That it is a good test" under the conditions in Wyoming. Under the conditions to be had in south Florida, I consider it the only reliable test for tuberculosis that we now have. Speaking particularly of Hillsborough County, and locally, of the cattle in and around Tampa, Fla., we have the Jersey cow almost exclusively. Careful observation during fourteen years' practice here has shown me that our dairy cattle, in complete health, carry a normal range of temperature through three to four degrees daily—that is, a dairy cow in full milk will show 100°F. or 101°F. at the time of the morning milking. She will come in for evening milking and give a reading of 103°F. to 104°F. The thermic test will condemn this cow. The intra-dermal test will pass her and post-mortem examination will substantiate the latter test. I have had a number of opportunities to follow just such a circumstance through. Our dairy cattle are never stabled. We use open sheds for milking and the cattle are in the stanchions only long enough for the milking. Now, hold these cattle up for a day or two, for temperature readings, or drive them in and out at unusual times, and high temperatures are certain; and it is entirely

unnecessary to use tuberculin to get them. Also, there is a marked decrease in the milk flow. I have used the intra-dermal test on some thousands of cattle and they never know they are interfered with. In the spring of 1906 I tested, by the thermic method, some three thousand head of dairy cattle that were then supplying Tampa with milk. At that time I noticed that no thermometer was needed to pick out the reacting cattle, following inoculation. They came in lame and with a swelling at the point of inoculation on the morning after the latter had been made. This circumstance I reported in the then *Veterinary Review*. I knew the Wyoming and Montana ranges, from the viewpoint of a "cow-puncher," in the front end of the '80's, and if Dr. French and his staff have the class of cattle to deal with that I knew at that time I do not envy them the work. At least, I should want my "lass" and my "tie rope" right regular.

FRED W. PORTER, D. V. M.

NECROLOGICAL.

MAJOR HARRY DOUGLAS GILL, V. S.

The following tribute to the late Major Gill, from the pen of Dr. Robert W. Ellis, which was published in the New York University Veterinary Bulletin, issued October 26, was forwarded to the Journal for the November issue, but reached us too late for publication:

Major Harry D. Gill died at Waynesville, North Carolina, on October 3, 1918, in his fifty-seventh year. Born in New York City in 1861, Professor Gill as a boy attended the public schools and later the College of the City of New York, the Bellevue Hospital Medical College and the New York College of Veterinary Surgeons, from which last institution he was graduated in 1884 with the Veterinary Surgeon's degree.

He immediately entered into the practice of his profession, and early in his professional career associated himself with his *alma mater*; and while still a young man had attained the responsible position of Dean of the New York College of Veterinary Surgeons and Professor of Veterinary Medicine, which position he held until the amalgamation of that school with the American

Veterinary College in 1899, when he was made Secretary of the faculty of the amalgamated school and Professor of Surgery, which position he held up to the time of his death. Professor Gill was a man of tremendous energy, for which his practice and school work were not even sufficient, and he early became connected with the U. S. Department of Agriculture, the New York State Department of Agriculture, the New South Wales Government export, the New York City Department of Health and the New York Police Department in the medical care of the horses of its mounted division. He was still actively connected with the New York State Department of Agriculture at the time that he received his commission from the United States Government and entered the Army Veterinary Service in the Spring of 1917. Here, as in his private professional life, he worked hard and incessantly. He entered the Army Service from a spirit of patriotism, sacrificing great interests in cheerfully accepting a second lieutenancy and assuming duties that merited a much higher rank. His excellent work in organizing and conducting his office soon demonstrated this, and he was promoted on his merits to the rank of major and placed in charge of the port of embarkation at Newport News.

In the veterinary school his energy and enthusiasm were an inspiration alike to his fellow instructors and students, who all keenly feel his loss. In the profession and in the associations in which he took a keen and active interest he was held in high esteem and occupied a warm place in the hearts of all who knew him well.

Funeral services were held at his late residence, 337 East 57th Street, on Tuesday evening, October 8th, when fifty-five veterinarians (three from the Army Veterinary Service in the uniforms of their rank) and hosts of friends, as well as members of Tecumseh Lodge, F. and A. M., were gathered to pay their last respects to our departed alumnus, friend and brother. Preceding the beautiful and impressive Masonic services, Dean Hoskins paid a feeling tribute to the life and beautiful character of our departed brother. Chancellor Brown of New York University, in a letter under date of October 4th, 1918, to the members of the veterinary and medical faculties, gave expression of his feelings in the following words: "With the deepest sorrow, the Chancellor of the University announces the death, after a short illness, on Thursday, October the third, at Waynesville, North Carolina, of Major Harry Douglas Gill, V. S., Secretary of the New York

State Veterinary College, established at New York University."

The Army Veterinary Corps, though denied the extensive representation that its sentiment prompted, because of the strict quarantine placed on the various camps due to the prevalence of Spanish influenza, gave expression of their deep feelings in a beautiful floral tribute. Other floral pieces were sent from the American Veterinary Medical Association, the Students' Association at the college, of which Major Gill was Honorary President, from the Faculty of the Veterinary School and from individual veterinarians, as well as from his many friends.

Major Gill is survived by a widow, two sons and a daughter, a father, sister and brother, Dr. Wallace Gill. His two sons are in the service of their country in France, one being Lieutenant H. Percy Gill of the Army Veterinary Service.

DR. C. C. NEAL.

At the time of his death, Dr. Neal was a staff member of the Mulford Biological Laboratories, Glenolden, Pa., and specially interested in the production of tetanus toxin. He left the laboratory on September 28, apparently normal. He went direct to Green Castle, Pa., for a visit, and on arrival there, on the afternoon of the 28th, he complained of not feeling well. During the following week he developed a typical case of influenza, complicated with pneumonia, and died on October 6.

The Mulford News Letter had the following obituary notice: "We deeply regret the death of Dr. C. C. Neal, who passed away last Sunday. He was the first from the Glenolden Laboratories to fall at his post of duty during the present epidemic. Honor to his name, the same as to those who have fallen on the other side."

DR. STEPHEN C. MILLIGAN.

Dr. Stephen C. Milligan, veterinary inspector in the Bureau of Animal Industry, stationed at East St. Louis, Ill., died suddenly in Chicago on September 27. Dr. Milligan is survived by a mother, sister, and brother. The deceased was a graduate of the McKillip Veterinary College in 1910, and was elected a member of the American Veterinary Medical Association at the recent meeting in Philadelphia. He was born March 31, 1882, at Chicago, Ill.

DR. HECTOR FRASER.

Dr. Hector Fraser, Veterinary Inspector at the Fort Worth Stockyards, died on October 16 of heart failure as the result of an acute attack of influenza. He was a member of the A. V. M. A. Dr. Fraser was a temporary employee, having entered the service on September 3. It is said that he gave up a very enjoyable practice at Taylor, Texas, for the sole purpose of serving his country during the war; and in this respect it may be said that he gave his life for his country. Dr. Fraser was buried at Fort Worth by his new friends, no relatives being in attendance.

H. GRAFKE.

DR. THOMAS B. CARROLL.

Dr. Thomas B. Carroll, a member of the A. V. M. A., died at Camp Bragg on November 10, after a brief attack of pneumonia. The Doctor had spent most of his life in Wilmington, N. C., where he practiced his profession and held the position of city meat and milk inspector. About four months ago he entered the Officers' Training School at Camp Greenleaf, and upon the completion of which he was commissioned first lieutenant. He was detailed camp veterinarian at Camp Bragg (Fayetteville, N. C.) ten days before his death. He was a member of the North Carolina Board of Veterinary Examiners, and was very prominent in municipal affairs in Wilmington. He was also very progressive, and did much to elevate his profession to a high plane. Dr. Carroll was fifty years of age, and left an invalid widow and one daughter eight years old; also a married sister and two brothers.

M. G. SMITH.

HON. ANDREW DICKSON WHITE.

Hon. Andrew Dickson White, "spiritual founder" and first president of Cornell University, died in Ithaca, N. Y., November 4, 1918. He was buried November 7, his 86th birthday. Dr. White was an eminent diplomat, scholar and educator. Few if any of America's representatives in foreign countries have rendered greater service to the American people. In 1884 he was an attaché to the American legation in St. Petersburg, now Petrograd, Russia. He was Minister to Germany from 1878 to 1881 when Bismarck was at his zenith, and he was Minister to Russia

from 1892 to 1894. The crowning honor which came to him in the course of his public career was his appointment as chairman of the American delegation to The Hague peace conference in 1899.

He was for half a century a guiding spirit in American life, but the responsibility which accompanied every opportunity he discharged nobly. It may be said of him, as it was said of Columbus, that "he had a taste for great things."

To many, Dr. White is known most for his work in connection with the founding and building of Cornell University, which he himself considered as the principal achievement of his long life. He says in his autobiography: "By the part I have taken in that more than any other work in my life I hope to be judged." In the spring of 1868, just before the opening of the university, he went to Europe in search of distinguished men for the faculty of the new institution. Among the men whom he brought to the university was Dr. James Law. Dr. White was a strong believer in higher veterinary education and loyally supported Dr. Law in his efforts in the advancement of the profession. V. A. M.

PERSONAL.

First Lieutenant E. Lapple, Veterinarian of the 345th F. A., from "somewhere in France" writes that he is temporarily detached from this organization, but expects to return to it soon. He states that his "Journals are about a month late, but they are particularly interesting, and I find them very helpful." The doctor also states that there are many interesting things to write about, but that he has many reports to make out, and "It's time for mess and the veterinarians surely do their part here."

MISCELLANEOUS.

Dr. W. A. Scott, Columbus, Ga., has been appointed a member of a recently created Board of Health Control by the city of Columbus. The new Board consists of five members. The veterinary profession is gradually being recognized as a most important factor in health control.

"SNEEZING HOGS THREATEN PORK SUPPLY."

A correspondent has sent The Journal the following clipping from the Davenport (Iowa) Times, of November 6. It may interest some; perhaps instruct (?) a few; and mayhap disgust a goodly number of the members of the profession:

"The epidemic of hemorrhagic septicemia among herds of hogs in the county is assuming such alarming proportions that County Farm Advisor Palmer R. Edgerton is issuing warnings to farmers to use every precaution to stamp out the disease. Hundreds of hogs in both the upper and lower ends of the county are afflicted with the disease, some in more severe form than others.

"The county farm expert advises all farmers who suspect that their hogs are not well to communicate with him at once and he will visit the sick herds and ascertain if they are afflicted with the malady which is sweeping over the country and which, if not stopped, seriously threatens the pork supply. Mr. Edgerton is equipped with information to combat the disease, and will gladly dispense it to farmers who need it.

"Hemorrhagic septicemia is a form of influenza, similar to that prevailing among people at this time. While it is not believed to be directly contagious, the malady travels in great epidemics, which makes it as dangerous as though it were contracted from one animal to another.

"Mr. Edgerton is making every effort to impress on the minds of farmers the great danger of the disease and is prepared to give them every aid possible.

"As far as known, the disease does not afflict any other kind of stock except swine."

Dr. William Moore has been transferred from the work of tick eradication, Baton Rouge, La., to such work on the Jacksonville, Florida, force.

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1919.

The year just closed has been one of extreme strenuousness, as well as of considerable anxiety, both at home and abroad. Every effort was put forth to bring the war to a successful termination, both by the military authorities of the different nations engaged and by those in civil life, to see that nothing was left undone to provide the necessary material needed by those in actual warfare.

There were periods during hostilities, however, that were punctuated by anxious moments, and it was not until well on in the past year that the light of complete success was in evidence, and the great object of the standard-bearers of humanity and civilization within sight of final achievement.

The war has, necessarily, caused disorganization in all lines of human effort, in the professions as well as in those of production on the farms and in the workshops, and it may take some time to bring about normal conditions generally. However, the chief object has been attained; and as our country, especially, was able to transform a national life of peaceful occupation into one of combat in such an unprecedentedly short space of time, there seems every reason to anticipate that transformation in the reverse order will at least approximate the splendid effort made after we were actually at war.

The immediate future is not, of course, clearly revealed to us, but we have great reason to be thankful that the year 1919 opens with a cessation of hostilities, and that peace, when it is officially declared, is likely to be permanent and lasting.

Enforced production, especially in animal life, and its splendid results during the war, will, we believe, stimulate our farmers and stockmen to greater effort in the future in the growing of improved live stock of different kinds, which should mean a greater demand for competent veterinary aid; and if this should be so, which we think is more than probable, members of the profession who have been absent from home "doing their bit" in bringing "peace on earth," should, ere long, be able to resume their places in civil life with less difficulty, and in a shorter space of time, than might have been anticipated. Let us hope it may be so. Therefore, let us "ring out the old year and ring in the new" with the hope and determination that 1919 will be a most prosperous one for the profession as a whole—which is the sincere wish of *THE JOURNAL*.

SCIENCE AND THE LAITY.

It is questionable, we think, whether the most satisfactory results are secured from the discussion of purely scientific subjects before an association of mixed membership, and more particularly when investigations have not been completed and definite results not yet obtained. The lay members are more than likely to gain false impressions and get the idea forced on them that the scientific membership is by no means a unit, which may be true, with regard to some of our most important infections, and how to satisfactorily control and eradicate them. The result is, the layman is "up in the air," so to speak, and reflection is very likely to be cast upon the work of the scientist, who may be laboring earnestly to try to solve vital economic problems of such character.

These remarks have been prompted by the apparently unsatisfactory state of our present knowledge with reference to at least two infections which are of such economic interest to the country as a whole, viz., hog cholera and contagious abortion, and the discussion of them at the recent meeting of the United States Live Stock Sanitary Association in Chicago. In this, however, we are not reflecting on the intelligence of the lay members of

that organization, as they are not presumed to be familiar with scientific technicalities. What they are desirous of is the best practical sanitary information they can obtain, so that they may be in a position to use it to the best advantage in their respective states.

The question arises, therefore, would it not be better to confine purely scientific and technical discussion of conditions, not yet fully determined, to our professional gatherings and bring to the live stock sanitary meetings, where mixed membership obtains, the latest knowledge of practical sanitary procedure, to date, which has been gained from previous investigation and discussion?

This, it appears to us, would tend to avert possible criticism of our professional sanitarians—in fact, the profession generally; it would permit of more intelligent discussion by lay members, besides being more satisfying to them; it would benefit veterinarians themselves; and it would, we believe, create a more co-operative spirit among all who have to do with the sanitary control of our more costly animal ailments.

Unfortunately, all knowledge concerning the two diseases alluded to is not, as yet, in our possession; but there must be, from what we already know, some special or general line of sanitary procedure which, if intelligently understood and carried out, would have a marked bearing on control work generally.

Why, then, not leave the purely scientific side of the problem to the research men and the professional sanitarians to be discussed at their scientific gatherings, and devote more of the time of live stock sanitary meetings to discussions of the most practical sanitary methods which may have been evolved to date. We believe the matter will bear consideration.

AD VALOREM.

A duty faithfully discharged will commend any unit or collection of individuals to more responsible positions in life than, perhaps, any other one asset. There is a mysterious spirit in conjunction with faithfulness and loyalty that towers supreme above all other characteristics, and it permits the critic to be more charitable and forgetful of human weaknesses, being cognizant of the fact that if one does the best he can he has done the best anyone can do. After a conscientious duty has been

performed, it is undeniable evidence that the goal of perfection is being approached along the lines of the least resistance.

During the last eighteen months the patience of all men has been more sorely tried than ever before in the history of civilization, and the veterinary profession over the entire world has had its share of joys and sorrows. Our minds have been centered upon the battlefield where all the vocations in life have been ably represented and honored by their respective governments. No one profession stands out, particularly, as more useful for material advancement than another, and it would be the crest of selfishness to undertake to hold a different view. Notwithstanding this fact, all individuals and organizations must work out their own destiny on the merits of their usefulness to mankind.

In the memory of the younger class of veterinarians, the veterinary profession in the United States was without popular recognition, but, thanks to a number of faithful and gallant representatives, a record has been established on character and education which has proved to the people our right to grow, expand and prosper. The profession has demonstrated, beyond a reasonable doubt, that it can successfully control and eradicate the diseases domesticated animals are heir to, many of which are transmissible to man, which ultimately means the saving of thousands of human lives.

In all of this campaign of education and demonstration, the critics have never lost an opportunity to either praise or censure us, but we have emerged from the ordeal more determined than ever to stand completely alone upon our own achievements.

The golden opportunity for advancement has arrived, and if one could have selected a particular time better adapted for us to continue to shape and frame our destiny, he could not have improved upon the present. We can exhibit results based on efficiency, and, moreover, the necessity for a more perfect system in all branches of public veterinary service. Optimism should be our guiding star in order that hard experience may be turned into capital for future ambitions.

The battle of Armageddon has thrown three thousand veterinarians of the United States into the melting pot of nations, and they are proving themselves equal to the great adventure. After the battle for world democracy has been settled, when peace on earth and good will toward mankind shall reign supreme, and the carnage has been forgotten, we hope to stand

unveiled and unsullied before the world, welcoming criticism. We must absolutely forget personal greed in every undertaking we pursue, and hold the profession above individualism and politics which will bespeak for us the best and most convincing evidence ever presented to insure that a verdict of acquittal be returned which will guarantee that the name "Veterinarian" will be indelibly written in the minds of every intelligent citizen as standing for education in a branch of medicine that has made a place for itself on merit.

E. I. S.

LET'S GET TOGETHER.

What would happen to the veterinary profession of North America if the A. V. M. A. were to fail? It's not, of course, and no one thinks it is even likely to fail in any way, but it would seem from certain angles of view that we are overlooking some opportunities to make our great national association what it should be, at least in the matter of membership.

Estimates made about three years ago indicated approximately between 15,000 and 16,000 veterinarians actively engaged in veterinary work in the United States. Many more are in Canada and veterinarians from both countries are eligible for membership in the A. V. M. A.

In view of the principles for which our Association stands, and its power for good to the profession in general, should it not represent a majority? Does it? Our roster totals about 4,000 names, less than 25 per cent of the total estimated number of veterinarians actively engaged in veterinary work in the United States alone.

Why is this? How can it be corrected? These are questions for each man to answer for himself in his own way, but are we individually and collectively doing all we can to secure new members and to retain the old ones?

These questions are prompted by views relative to the A. V. M. A. expressed by some of the veterinarians in the army during a recent "drive" at this camp (Greenleaf) for new members, the results of which, by the way, netted a total of 400 applications (in addition to those sent in prior to the Philadelphia meeting). Veterinarians in the M. O. T. C. at Camp Greenleaf come from every section of the United States and represent practically all veterinary colleges; thus a rare chance is afforded for

exchange of views. It seemed quite remarkable to note that rarely, if ever, are the advantages and objects of the A. V. M. A. brought to the attention of senior students just prior to graduation. Should this not be a matter to be attended to either by colleges or representatives of the Association? Several men from different colleges stated that no such action was the custom. Are we not overlooking good chances to acquire first rate new members?

Increased standards of veterinary education are rapidly adjusting themselves by a process of natural and forced evolution. Men with doubtful general or veterinary education are now rarely graduated; so is the time not now ripe to gather in every possible application from veterinarians of good moral standing? Would not such action serve to help the less perfectly educated man more than it would result in possible injury to the Association? Would not the power of the A. V. M. A. be greatly enhanced to have it really represent at least a majority of the veterinarians of North America? These are all pertinent questions and deserve consideration.

Many great and important opportunities will be before the A. V. M. A. for action during the next few years. The results of the war, as well as army life, have taught us the inestimable value of coöperation, and many veterinarians will now desire affiliation with the Association that had not formerly considered filing applications.

Let's take advantage of this spirit! Let's get together and put forth every effort to get new members. Start a campaign whereby no one will be overlooked. See that the matter is taken up by every college, every state and local association, every resident state secretary and every individual member. Let's try and secure a majority by 1920. Let it be said at the meeting next fall that the A. V. M. A. represents a majority of the veterinarians in North America. Let's have that as our 1919 slogan! The B. A. I. is coming in strong, the army has contributed its quota of new members; now let's have additional new blood from every state.

OTIS A. LONGLEY,

Captain, Veterinary Corps.

A PRELIMINARY NOTE ON INFECTIOUS KERATITIS.*

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Infectious bovine keratitis has a wide distribution. Outbreaks have been reported from time to time in India, Holland, South Africa, United States of America, and in the Western and Eastern provinces of Canada. There is a striking similarity in the symptoms manifested in these widely separated localities, but this does not preclude the possibility that the disease in these different countries is not due to the same causative agent.

REVIEW OF THE LITERATURE.

The earliest systematic work of which we have been able to find record is that reported by Frank S. Billings in Nebraska in 1888.

In stained sections of the diseased cornea, a short, thin bacillus with rounded ends was observed, which seemed to be of a marked pleomorphic type. Pure cultures of this organism were obtained, but no attempt was made to reproduce the disease with the bacillus, since previous experiments in which the exudate from a diseased eye was transferred to the eye of a healthy animal resulted in absolute failure. The disease could not be transmitted in this manner even when the cornea was previously scarified with a lancet. This writer concludes, however, that this evidence is not sufficient to disprove the infectious nature of the affection.

In Manitoba a number of outbreaks have occurred. In 1904, Hilton reported that this disease extended from Popular Point to Longburn, a distance of about forty miles. As a rule, 50 per cent of each affected herd developed the disease. As a result of ulceration, many of the animals became permanently blind. There is no record of any laboratory investigation having been conducted in this epizootic.

Satyendra Nath Mitter, G. B. V. C., Bengal, giving the results of his investigation into an epidemic of contagious ophthalmia among conservancy cattle, in which the cornea was seriously involved, states that the outbreak appeared to be mainly caused by the *Micrococcus lanceolatus* and partly by the bacillus of

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Morax-Axenfeld. In this outbreak the period of incubation varied from three to seven days.

Mitter also found it impossible to produce the disease in experimental animals, and concludes that the organisms isolated in this epidemic appear to have no action on unbroken conjunctiva, but when brought in contact with an abraded surface they are liable to produce the disease. It is not stated whether experiments were conducted to verify this hypothesis.

A similar investigation was made in Holland by Dr. J. Poels. In the beginning of the work Poels assumed that the virus could not be found in a virulent form in the exudate, which, he states, is the result of a hypersecretion of the eyelids. He further reports that when the organism which he incriminated is found in the secretion, as is the case in slight affections, cultures can not be made therefrom because the bacilli have died as the result of bacteriolysis.

If the causative agent is hemmed up in the layers of the cornea, and does not escape in a virulent form with the secretion, it is difficult to form a conception of the mode of infection in a natural outbreak.

Assuming that the live organism is not to be found in the exudate, Poels dissected out a portion of the diseased cornea, and microscopic preparations made from this showed myriads of bacilli having the morphologic characters of the *Bacillus pyogenes*. Cultures made from the same material resulted in the growth of a similar organism.

This experimenter could not reproduce the disease in healthy eyes by dropping pyogenes cultures on the cornea, but when cultures were injected between the layers of the cornea there resulted a typical case of keratitis. This result is not astonishing, since the organism occurs in the inflammation of different organs in cattle, Poels himself having demonstrated the organism in thirty-eight out of fifty-six such cases.

Dr. Poels concludes from these experiments that the *Bacillus pyogenes* is the true cause of keratitis infectiosa in Holland.

PRESENT INVESTIGATION.

In the latter part of last month, Dr. H. D. Sparks, Veterinarian, Ottawa, called the attention of the Health of Animals Branch to a limited outbreak of an apparently infectious eye disease which involved a mixed herd on a farm near Aylmer, Quebec.

When the first case was reported it was thought to be due to mechanical injury; and it was not until a week later, when a second animal developed symptoms, that the disease was attributed to a possible infection. Six days later two other animals showed symptoms. The affected animals were placed under strict isolation, and after three weeks no further cases have been reported.

Symptoms.

The premonitory symptoms were marked lachrymation, photophobia and injection of the circumcorneal vessels and those of the



Infectious Keratitis.

—J. A. Allen

conjunctiva. There was little constitutional disturbance; only in one experimental animal was there a slight elevation of temperature observed (104.4°). In a few days the pain becomes more intense, and the cornea takes on a smoky haze, which in all cases observed began at a point just below the center of the cornea, and which ultimately spread over the entire surface. In four or five days the opacity becomes denser and as a result vision becomes impaired. At this stage two of the affected ani-

imals showed signs of recovery; but in the other cases the infiltration became even denser. The opacity was now of a yellowish color, and a fringe of blood vessels appeared in the marginal part of the cornea. In those cases which showed improvement, absorption of the intercorneal exudate began at the periphery and gradually extended towards the center of the cornea. A marked symptom at this time is the appearance of small protuberances upon the surface of the third eyelid.

When last seen the eyes of the severely affected animals showed little improvement under treatment, and there was a slight evidence of the beginning of ulceration. It is interesting to note that both eyes became affected in two of the animals under observation.

BACTERIOLOGY.

In direct smears made from the watery exudate, it was possible to demonstrate a short, thick, gram negative diplobacillus. These bacilli were not present in large numbers and in incipient cases could be demonstrated only after several smears had been made at the same time. Frequently the bacilli were found in clumps. There is not much pus produced in this disease, but when a particle could be secured the diplobacilli were fairly plentiful and were found lying between the leucocytes.

Before attempting to cultivate the organism, sterile swabs were saturated with the secretion from the diseased eye, brought to the laboratory, and immediately passed lightly over the conjunctiva of a healthy heifer. In six days intense lachrymation and photophobia were manifested, and in a few days the animal presented a typical case of keratitis. Two days later other swabs were procured in a similar manner, and in eight days the disease was reproduced in a young bull. Similar experiments conducted with rabbits and guinea pigs gave negative results. A diplobacillus was demonstrated in smears made from the exudate of the experimentally infected animals.

Several attempts to isolate the diplobacillus, seen in direct smears, on agar, resulted in failure; only a few colonies of staphylococci were grown. In subsequent work Loeffler's blood serum was employed, and the first culture gave an organism that closely resembled the diplobacillus in direct smears. However, while nearly always occurring in pairs, the bacillus seemed to be of a pleomorphic type, for some of the individuals appeared larger and some smaller than the original organism observed in

the smears from the swabs from which the cultures were made.

It has been found that the bacillus isolated by us agrees with several of the important published characteristics of the organism associated with infectious conjunctivitis in man, which was described by Morax and independently by Axenfeld in 1896.

In text-books there is a disparity in regard to some of the outstanding characteristics of this bacillus; for example, some writers state that the organism is incapable of producing disease in the lower animals, and that it is gram negative, while others ascribe to it just the opposite characters.

The following is a brief tabulation of the principal characters of the diplobacillus of conjunctivitis as given by the original communication of Morax:

“A microscopic examination of the watery secretion, which sometimes contains muco-purulent flakes, often gives negative results. When present in the exudate, the bacilli usually occur in pairs, end to end, but sometimes they are found clumped together.

Morphology—The bacilli are from two to three micra long and one and one-half micra broad, ends rounded, occur in twos or small chains.

Staining—Stains with all anilin dyes. Do not stain evenly when grown for some time on artificial media. Gram negative.

Blood Serum—Morax used serum agar or ascitic agar. In twenty-four hours grayish patches appear which are just a little more opaque than the surrounding media. In two or three days the colonies are about two millimeters in diameter, and their edges are more transparent than their centers. Other observers state that moist points appear on serum in 24 hours, which later form depressions due to liquefaction. Involution forms are produced.

Agar—Ordinarily there is no growth on any of the common media, but when an abundant culture is transferred into nutrient agar, some colonies may develop. This transference reduces the vitality of the organisms, so that they cannot be subcultured on agar.

Optimum Temperature—30° to 37° centigrade, grows slightly or not at all at room temperature (23°C).

Pathogenesis—Morax produced the disease in man in three days by the instillation of a pure culture; failed to infect a monkey, pigeons, or laboratory animals.”

The biologic characters of the organism associated with this outbreak may be tabulated as follows:

Morphology—About two micra long and one micron broad, occur in pairs end to end.

Staining—Stains with all common laboratory dyes, gram negative.

Blood Serum—In twelve to twenty hours small depressions appear due to liquefaction. When first isolated complete liquefaction of the media takes place in about five days; on subcultures this occurs more rapidly.

Agar—Could not isolate organisms from exudate on agar; subcultures planted on agar grew quite luxuriantly, giving a grayish, film-like growth which become wrinkled with age.

Optimum Temperature—Grows best at body temperature, but an appreciable growth is obtained at room temperature.

Pathogenesis—A pure culture instilled into the eye of a calf has failed in fourteen days to produce symptoms.

DISCUSSION OF RESULTS.

In view of our observations, an abrasion of the eye is not an essential factor in the production of infectious keratitis, although previous investigators have given this a prominent place in the etiology of the affection. Indeed, if an abrasion were necessary in all cases, the disease could not become so widely and rapidly disseminated as is the case in natural outbreaks.

It is probable that the disease is usually conveyed by contact, such as direct contact between the animals themselves or indirectly through the agency of flies. It is significant that the disease is more prevalent during the fly season. Nuttall and Jepson, Howard, and others have pointed out that ophthalmia among the natives in Egypt is largely transmitted by flies.

It would seem that when the disease attacks range cattle that the complications are more severe, for a large number of those involved show a permanent blindness as the result of ulceration. This is doubtless due to the aggravating influence of intense sunlight and dust. Such sequela did not occur in our experimental cases, which were stabled in darkened quarters as soon as they were visibly affected.

The fact that we have been unable so far to cause the disease by the instillation of pure cultures is attributable either to our not dealing with the causative organism or that the bacillus undergoes a change or becomes attenuated while growing upon artificial culture media.

SUMMARY.

- (1) Previous investigators have been unable to reproduce infectious bovine keratitis in experimental animals by the instillation of pure cultures of the predominating organism or by the transference of the exudate.
- (2) In this investigation the disease has been successfully transmitted by passing an infected swab over the conjunctiva of healthy animals.
- (3) A diplobacillus having several of the prominent characteristics of the Bacillus of Morax-Axenfeld, which is associated with human conjunctivitis, has been isolated. The disease has not yet been artificially produced by the instillation of this organism. This may be the result of several causes, or possibly from the attenuation on artificial media.
- (4) An abrasion of the eye is not an essential factor in the production of the disease.
- (5) Flies may play an important role in the dissemination of the affection.

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HOG CHOLERA CONTROL IN THE EAST.*

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It seems customary for persons from Western states which have large numbers of swine to think that hog cholera is of small concern to Easterners because there are in comparison so few swine east of Ohio. It should be realized, however, that there are a very large number of herds of registered swine in the East and also that an enormous amount of money is invested in the business of feeding garbage to swine. Although the total number of swine in the six New England states, for instance, would not equal in number those in one Western state, it is, nevertheless, a fact that the number of persons interested in the control and eradication of hog cholera is very large. The difference in the number of animals can be ascribed to the smaller size of the herds and not to the number of persons who actually own swine.

A feature which has considerable bearing on the subject of hog cholera control in this section is the number of herds in which the animals are fed garbage. In the state of Massachusetts, for instance, it is estimated that 90 per cent of all swine are fed upon garbage. Herds of swine varying in number from 500 to 5,000 animals fed upon this waste product are to be found in the vicinity of almost all Eastern cities. This method of garbage disposal has been followed extensively for many years and has been limited only by the amount of garbage available and until recently by hog cholera. With the exception of a few of the larger Western cities, this practice has not been followed to any extent in other sections of the country. During the past year interest in this method of feeding has become widespread, and the demand for garbage for feeding purposes exceeds the supply in every section of the country. The reason for this demand may be ascribed to several causes, among which may be mentioned a more careful study of the success which has followed this practice in the East, the rapidly increasing cost of other food stuffs, and the universal demand for the conservation of everything capable of being conserved. The garbage from most of the army cantonments is being fed to swine, although in many cases they are located in sections of the country where heretofore this product has been disposed of in some other manner. These conditions

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all tend to make more valuable the experiences of Eastern states in controlling hog cholera.

A general survey of the Eastern states shows that the lack of uniform control methods is just as pronounced as in other sections. Thus we see states where no real effort is made to control the disease and where it is allowed to spread or be spread either by natural means or by the promiscuous use of virus. Other states urge the use of serum while discouraging the use of virus, while still others advise and officially administer the simultaneous treatment.

It should be kept in mind that in the majority of cases the live stock sanitary authorities promulgated their control measures in accordance with what appeared to be best for the live stock interests of their respective states. This, of course, does not apply to states where control measures are lacking entirely or are political control rather than disease control measures. In certain states where previously the simultaneous treatment has been prohibited the demand on the part of owners of pure-bred stock and by garbage feeders for permission to have their swine immunized by the simultaneous treatment has increased enormously. These stockmen realize that any transitory form of immunity against hog cholera is of no practical value to them since an active immunity can be procured at practically the same cost as a passive immunity from the injection of serum. In the past the demand of these men has been offset by the desire of the live stock sanitary authorities to keep clean territory from becoming infected by the use of virus. However, knowledge that the simultaneous treatment is being administered under proper restrictions in other states without infecting new territory is not lost upon these men. As a result, their demand to be given the same advantages as breeders and feeders in other states seems justifiable and a change in the regulations of such states seems not only probable but desirable. It is to be hoped, however, that when such changes are made every precaution will be taken to insure the use of these products only by competent officials under state control, rather than to make possible the spread of the disease as has occurred in certain states by the misuse of serum and virus.

In this connection it is interesting to note that the live stock interests in the state of Connecticut were responsible for the passage of a law which places the administration of all serum and virus under absolute state control, whereas previously these

products were used by both veterinarians and laymen. The live stock sanitary authorities of that state were not among those desiring the law, but, rather, were hostile to the same, notwithstanding the fact that the enforcement of the provisions of the law gives them greatly enlarged powers. The results of the change in that state are most gratifying, since fewer outbreaks of the disease are noted, and swine are being immunized in larger numbers than at any previous time. Cases of this kind indicate that swine owners in the East are not in favor of having their swine immunized either by themselves or county agents, as is done in other sections. The fact that many of our Eastern states appropriate larger amounts of money each year for the prevention of contagious diseases in animals than is done in some Western states, where the number of animals is considerably greater, is testimony of their appreciation of the services of veterinarians and state control measures. It is to be expected that the very best control methods known should in return be given by officials charged with this work, and that existing disease control methods should be as liberal and practical as is consistent with public safety. These conditions should serve as an indicator of the times to officials in states which are noted for their lack of efficient control measures. It indicates that in the East the live stock interests are awake to the need of proper laws and control measures regarding hog cholera and will be the means of procuring the same if officials fail to do so.

Since the writer is no longer connected with the work which is being done in Massachusetts, he feels that he may with propriety refer to the remarkable showing made by that state in controlling hog cholera. The control methods which have been in effect for over four years in that state were original, and at the time of their adoption were considered the most drastic which had been adopted in an attempt to control hog cholera. The results of these control methods have been so satisfactory that they are now considered not drastic, but model, and because of their effectiveness are now being adopted in their most salient points by other states.

Briefly, the important points of the Massachusetts system may be given as follows: All anti-hog cholera serum and hog cholera virus to be used in that state are tested by the Department of Animal Industry upon their arrival, regardless of any previous tests. If these products pass a satisfactory test they can then be administered only by veterinarians who are employed by and

responsible to the state. The outstanding advantages of this method may be summarized as follows:

1. It prevents the use of virus which lacks virulency and serum lacking potency.
2. It minimizes faulty technic.
3. It unifies the method of application, dosage and technic.
4. It makes possible the enforcing of quarantine and sanitary regulation which cannot possibly be obtained by the private veterinarian regardless of his professional ability.
5. It makes possible the procuring of accurate reports, data and statistics.

In more than four years since the adoption of this method there has not been an instance where non-infected territory has become infected from the use of virus, nor where the disease has been spread by its use. Although the method was at first received by swine owners with skepticism, the good results which have been obtained have won their universal approval, and at this time there are practically no large herds in the state, either grades or registered, which are not immunized by the state authorities, while the owners and the general public are ardent advocates of the simultaneous treatment, as well as of absolute state control.

The effectiveness of this method and the desirability of the adoption of methods along similar lines by other states may be seen by a study of page 40 of the report of the Commissioner of Animal Industry for 1917, a copy of which is reprinted on the following page.

COMPARATIVE STATISTICS ON HOG CHOLERA
FOR 1914, 1915, 1916 AND 1917.

	1914.	1915.	1916.	1917.
Outbreaks reported in which a negative diagnosis was made.....	20	122	57	42
Number of herds known to be infected.....	80	227	253	359
Number of herds known to be infected in which serum treatment was not administered.....	.....	77	43	77
Number of infected herds in which serum treatment was administered.....	65	150	192	283
<i>Herds Infected at the time Treatment was administered</i>				
Number of animals receiving "serum only" treatment, including infected animals and those too young for simultaneous treatment.	428	10,300	14,747	24,828
*Mortality from hog cholera following "serum only" treatment (per cent).....	9.5	7	3.7	1.75
Number of animals receiving the simultaneous treatment. These are "apparently healthy" animals in herds infected at time of treatment.....	591	5,826	13,643	15,524
*Mortality from hog cholera following the simultaneous treatment in infected herds (per cent).....	2	1.2	.6	.44
Total number of animals treated in infected herds.....	†1,019	16,126	28,390	40,352
*Total mortality following both "serum only" and simultaneous treatment in infected herds (per cent).....	5.2	4.9	2.21	†1.24
<i>Preventive Inoculation in Herds in which no Infection was Apparent</i>				
Number of herds immunized.....	2	95	\$113	\$470●
Number of animals immunized.....	104	863	7,657	10,870
Number of animals which died from hog cholera following immunization.....	0	1	0	3
Total number of animals treated.....	5,123	16,989	36,047	51,222

* These figures show percentages, not animals.

† Plus 4,000 which were treated, and died or were killed before results could be ascertained. These deaths were due to the use of serum which was impotent and virus which was not virulent, before the present regulations were made.

‡ This does not include approximately 50 animals which died on one farm, on which a final diagnosis has not been made. Clinically, and by autopsies, it was impossible to determine whether the disease was hog cholera or hemorrhagic septicemia. Laboratory examinations indicate the latter, but before the work could be completed the losses stopped, and more material which was needed for a final diagnosis was not available.

§ The large majority under this classification are herds which in previous years were classified as infected herds and which had yearly sustained heavy losses from hog cholera. The majority of them are garbage-fed, and experience shows that should immunization be stopped an outbreak of hog cholera would follow very closely. They are therefore classified as herds in which no infection was apparent at the time of treatment, whereas in reality they are infected herds in which the disease is kept completely under control while immunization is continued.

It may be said without fear of contradiction that the statistics given make the most remarkable showing which has followed any organized effort to control hog cholera. The work done in that state shows that the mortality from the use of virus can be practically eliminated and that the simultaneous treatment can be used in any section without infecting new territory. It should be borne in mind, however, that the work was carried out under absolute state control and consequently under more favorable

conditions and with more favorable results than could be obtained otherwise.

The method described above makes possible the close observation of all herds of swine upon which serum and virus are used, as well as results of the application of these products which can not be obtained in states where less thorough control measures are in force.

During 1915, while the writer was engaged in state control work, it became necessary to have some definite facts regarding the immunization of "baby pigs." Previous to that time it was our custom to administer the simultaneous treatment to pigs from two to eight weeks of age. In herds where this was done "breaks" frequently followed when the animals weighed from 60 to 200 pounds. Although serum producers and some state authorities advocate that the simultaneous treatment be repeated when the animals weigh from 50 to 60 pounds, we felt that many animals would retain sufficient immunity from the original treatment to make a permanent immunity from the second treatment an uncertainty. To determine this point the following experiment was conducted: 852 pigs weighing from 15 to 30 pounds were given 30 cc of serum and 2 cc of virus. During the experiment the animals were kept under environment to which they were accustomed and at varying periods, as shown in the following table, they were injected with 4 cc of hog cholera virus each. Before virus was administered the second time 52 animals died from various causes and are not included in the table.

Number given virus.....	200	200	150	150	100
Average weight at time virus given.....	60	85	110	150	200
Virus given — weeks after vaccination...	8	12	16	20	24
Number which developed cholera as result of receiving virus.....	42	96	78	97	72
Percentage of animals susceptible at that time	21%	48%	52%	64.7%	72%
Number which contracted cholera at a later date from pen infection.....	62	41	8	2	....
Percentage of original number which developed pen infection.....	31%	20½%	5⅓%	1⅓%	....
Total number which failed to receive lengthy immunity from first treatment.	104	137	86	99	72
Percentage of susceptible animals regardless of treatment as "baby pigs".....	52%	68½%	57⅓%	66%	72%

The most important conclusion to be drawn from this experiment is the large percentage of animals which, treated as "baby pigs," fail to retain their immunity for a lengthy period. Thus it is seen that from 52 to 72 per cent of all animals so treated failed absolutely to carry sufficient immunity to protect against the disease when exposed to a really virulent infection a short

time afterwards. As a result the application of the simultaneous treatment to "baby pigs" was discarded as a control measure. It has been noted that many hogs which are treated as "baby pigs" and which apparently have been immune will quickly develop hog cholera if shipped to herds where the swine are fed upon garbage. In this case their immunity is really subjected to test, whereas in the former case only a supposed immunity existed. The supposed immunity conferred to "baby pigs" by the simultaneous treatment will be found wanting in the majority of cases if these animals are really subjected to a virulent infection.

The results of the above described experiment also convinced us that attempts to obtain permanent immunity by repeating the simultaneous treatment was too uncertain in its results on account of the varying treatment. As a state control method it was considered dangerous and was discarded. Since that time young pigs are treated as follows: At weaning time (usually six weeks in the East) pigs are given serum-only treatment, six weeks later they are given the simultaneous treatment, using 2 cc of virus. Since adopting this method outbreaks of hog cholera in herds so treated are practically unknown, regardless of the length of time the animals are kept or the amount of infection to which they are exposed.

The writer is aware of the fact that the experiences described may not coincide with observations or experiences of investigators in other parts of the country. In this respect it would be wise for us to refrain from the tendency to become sectionalized by feeling that the conditions which apply to any particular section must necessarily apply to the entire country. There are certain differences in results obtained in different parts of the country which are difficult to understand. For instance, passive immunity conferred by serum-only treatment in the East seldom or never fails to last for six weeks. In some sections of the Middle Western states this same type of immunity lasts for only three weeks, whereas in several of the extreme Western states it is reliably reported to last for eight weeks, notwithstanding the fact that the same class of serum was used in all cases. Likewise, it has been noted that the immunity transmitted to pigs from sows immunized by the simultaneous treatment varies greatly in its duration. Thus, in some Western states it is found that such pigs develop hog cholera in seven to fourteen days after birth, whereas in the East it has been found that the pigs from sows treated in

exactly the same manner by the same product practically never develop hog cholera until they are at least six weeks of age.

It is rather difficult to understand just why these differences should be found, but the fact that they do exist raises many questions in immunology upon which a large amount of experimental work needs to be done.

DIFFERENTIAL DIAGNOSIS OF DISEASES OF SWINE.*

W. W. DIMOCK, Ames, Iowa.

GENERAL STATEMENT.

Of all the vital problems confronting the veterinarian and the veterinary profession today none is more important than the need for a better understanding of the diseases of swine that will lead to more complete and reliable methods for their prevention and control. The demand for this comes direct from those engaged in the swine industry; the necessity is a national one, and the opportunity offered is one practically unequalled to the veterinarian and the veterinary profession; and when I say this I am thinking of the great central west, the far west, and the south, and not of certain limited areas where a special line of animal industry predominates.

The work of the practitioner of veterinary medicine, or the development of "pig practice," as so many term it, has increased remarkably in the last few years. In the early days the owner seldom considered that it was worth while to call a veterinarian in case of sickness among pigs. The beginning of this phase of practice came later when the calls were almost wholly to deal with conditions that involved consideration for the safety of the herd. During the last few years the swine industry and our understanding of the diseases of swine has progressed to the point where calls to treat individual animals are of almost daily occurrence. Calls to treat pigs represent a surprisingly large percentage of the total number that a veterinarian receives. A conservative estimate for the average veterinarian in Iowa would be that 40 per cent of the calls he receives are to deal with diseases of pigs, either of the herd or of the individual, and that this phase of his practice, while representing 40 per cent of the calls, on

* Presented at 55th Annual Meeting A. V. M. A., Philadelphia, 1918.

the other hand represent 60 per cent of his business. While wonderful progress has been made in the investigation of diseases of swine and in the prevention and treatment of many of these conditions, experience under present and everyday conditions shows that there are some very important and serious gaps to be filled before we as a profession can feel that we are adequately meeting the problems of swine diseases as a whole.

Consideration, study, and progress in relation to swine diseases in the United States can in general be divided into three separate and rather distinct periods. From 1833 to 1880 may well be called the descriptive period, for during this time many able men wrote extensively of the clinical and anatomical nature of the infectious fevers of swine. From 1880 to 1903 may well be called the etiological period, for during those years a vast amount of work was done in search of a specific cause of the diseases of swine. From 1903 to the present time may well be known as the period of application, as during this time the information previously gained has been put to practical use. It was during the early part of this last period that a new classification was worked out to conform to the etiological findings.

In general, our information regarding swine diseases has come through three distinct agencies or channels: the Federal government, state activity, and the practitioner. The first and most general work was by the Bureau of Animal Industry, United States Department of Agriculture, and was undertaken because of the prevalence, rapid spread, and very severe losses from disease among swine in various parts of the country. Investigation and research on the infectious and contagious diseases of swine by the Bureau of Animal Industry since its organization have progressed with most gratifying results. Data of a very material nature has come as a result of the meat inspection service and through the work on the production of anti-hog cholera serum, especially in virus production.

State activity in the investigation and research on the diseases of pigs has naturally been most seriously undertaken in those states where the swine industry is of major importance. The state work has been directed along the same general line as that undertaken by the Federal government, but state activities have naturally come into more intimate contact with a greater variety of conditions that result in isolated losses, which are, however, of great economic importance. With the development of state laboratories for the diagnosis of animal diseases, and

through coöperation with the practitioners, the state work is in a position to ultimately become accurately acquainted with all the cases of individual losses, as well as with those infectious and non-infectious conditions that are so frequently general to the herd.

The investigation and research work on the diseases of swine by the United States Department of Agriculture has resulted in publications dealing with certain specific infectious diseases as such. The meat inspection service has furnished data on the conditions found in a special class of pig—that is, the market type. Serum production has dealt largely with the shoat from 50-100 pounds and the data obtained from postmortem on virus pigs has been largely for hog cholera which was artificially produced. The pig was clinically healthy to start with and was kept under artificial conditions, all of which has in a large measure eliminated field conditions under which the great majority of pigs are kept, as well as being from a special type of pig, and, finally, in only isolated instances has any attempt been made to study or even record the conditions found upon postmortem examination other than to recognize cholera, and in general the presence of secondary infections that are of importance in the production of serum. In general, the same is true of the nature of the information coming from state investigation work, but, as stated before, state work has through the laboratories and field men for the diagnosis of animal disease come into more immediate contact with field conditions. Beyond all this there is the vital, practical, and fundamental phase of this problem as it is encountered by the men engaged in practice. The practitioner comes in contact almost daily with conditions as they occur in the field, as they affect all types, ages, and classes of swine; with those conditions that favor the occurrence of complications, the multiple instances of mixed and secondary infection, sporadic and organic diseases, sanitation, and ventilation common to farm conditions; with the problems of disease in connection with breeding; with the question of the health and protection of the pure-bred herd and with the very important problem in connection with the health and care of very valuable individuals in these herds. While the veterinary practitioner is the only agency that has come in direct daily contact with the many complicated cases in regard to the diagnosis and treatment of swine, they have as a class from the very nature of things never given to the profession the benefit of their findings in the form of publication.

and as a result this fundamental and essential information is not available for the use and guidance of many. Even with the wonderful progress that has been made, I am sure that most of you will agree with me that there is still a great deal to be accomplished, for, while we have more or less definite knowledge and rather complete descriptions of certain specific diseases of pigs, in most cases these are from only one standpoint: the anatomical findings, the etiology, and in others from the history and clinical symptoms, and only in a few instances is our information on the diseased conditions of swine complete and definite in regard to all these points, nor do the publications go into detail in regard to the symptoms and lesions as they are so frequently found and modified under field conditions. We are, therefore, decidedly handicapped in not having complete information regarding many of the rather common infectious diseased conditions in pigs, in not understanding thoroughly the many local and organic diseases that so frequently cause the death of the individual, and in not understanding the great frequency of mixed infections and the numbers and identity of organisms that enter as causes of these mixed infections, and, lastly, in the past that no serious attempt has been made to compile the information we already have regarding the diseases of swine so as to make it available for the man engaged in field work.

In the past—and very largely at the present time—if a sick herd of pigs, or even a sick pig, was under observation the outstanding question was, Is it hog cholera? If cholera, certain definite steps are to be followed; if not cholera, no special effort in the past was made to make a diagnosis or carry out treatment; in fact, almost no attempt was made to handle diseases outside of hog cholera and swine plague other than to suggest that the herd be given some general tonic or worm mixtures.

Further, until recently the owners of large herds of swine have been perfectly satisfied to save the herd from cholera and take the losses that came from other causes as a natural one; in fact, this has seemed economically satisfactory to the breeder. When cholera was prevalent in its most destructive form—for example, during the years 1910-13, when 95 per cent of all losses of pigs from disease in Iowa was directly or indirectly from cholera—it was only natural and was perfectly safe for a veterinarian to suggest a diagnosis of hog cholera without leaving his office and be perfectly justified in recommending vaccination. The government and state agents could proceed on the basis of

cholera with assurance of the most gratifying results. At present, however, after bringing the disease under control by the use of anti-hog cholera serum and better sanitary conditions as they affect the development and spread of cholera and possibly from a natural subsidence of this disease in its more acute epizootic and destructive form, at least it is far less common and apparently less destructive, a change has come that demands a far more careful consideration before proceeding. Therefore, as cholera is more completely under control and the conditions surrounding the economic production of swine have materially changed, we can plainly see that the many isolated diseases of pigs are frequent and of great economic importance. This does not necessarily mean these numerous sporadic and organic diseases were not present before, but, rather, that they were obscured by the frequency and prevalence of cholera and the loss of a few individuals was not a serious item, nor does this mean that the fundamental character of diseases has changed. They are the same as before, but are somewhat modified and somewhat different in form, appearance, and frequency. This has come from the control of certain diseases, from the more frequent occurrence of others because of conditions that favor their spread and development* and, therefore, we have from time to time, depending upon the prevalence of this or that disease, a somewhat modified clinical picture and often a very complicated morbid anatomy in the field of swine diseases as a whole. Thus the occurrence and clinical picture of the diseases of swine in a given herd, community, or state is different from what it was only a short time before. Further apparent differences exist in regard to the infectious diseases of swine and especially in cases of hog cholera and swine plague, due to the fact that we have disposed of an enormous number of morbid conditions that were formerly classed along with cholera, and that the clinical study of the diseases of swine has become refined so that we are able more accurately to classify them. In this respect we have only made a beginning and the clinical pathological methods of diagnosis of swine diseases must still undergo further scientific differentiation if we as a profession are to meet with satisfactory success in the diagnosis and handling of the diseases that are common to this species of animal.

The question is often put as to whether the symptoms of the diseases of swine are possible of as fine a differentiation as are

* (Ex. infectious enteritis, necrobacillosis.)

the symptoms of disease in other species. Have we always to think of the disease of pigs in terms of the herd and not deal directly with the individual, or can we through study and understanding see the time not far distant when it will be possible to make as accurate a differentiation, clinically and anatomically, of the diseases of swine in both the individual and the herd as we make of the diseased conditions met with in horses and cattle?

In carrying out the various steps and processes necessary and essential in making a differential diagnosis of the diseases of swine one must have at his command at least the outstanding characters, clinical and anatomical, of all the diseased conditions that may possibly occur in the pig to the extent that they would serve as a guide at the time of the examination. The practitioner who has an important swine practice must be familiar with the diseases of pigs common to his community, state, and section of the country. He must have the diseases fixed in his mind in groups, *i. e.*, those having similar clinical symptoms and morbid changes, and then he must carry out step by step the elimination of the conditions that he is to take into consideration and by this process of elimination bring his observation and study to a successful conclusion in considering the herd itself or the individual animal. The first inquiry should be regarding the history. This is of great value and should include a history of the premises, a history of the herd, a history of the individual, a history of the feeding, water, and usually of stock foods, and a history of the movements of the owner and visitors to the premises. Following this he would take up a consideration of the clinical history of the individual, or of the herd, going into detail in regard to the symptoms and nature of the sickness, which should cover anything that might have occurred since the animal was first noticed to be sick by the owner, and from the time when first visited by the veterinarian. If a diagnosis is not possible after the question of symptomatology has been exhausted a postmortem examination should be made. This is practically always possible where either young pigs, shoats, or a large number are to be considered. In the case of an individual and a valuable animal this, of course, is not to be recommended until all hope of a successful treatment and recovery has been abandoned.

In holding a postmortem examination the object should be to confirm the findings of the clinical study, or in case a clinical study was not possible, or was negative, to make a diagnosis from the morbid anatomy. A correct interpretation of the lesions

found, and dependable conclusions, are possible only when made on the basis of a complete and thorough differential study. In order to do this one must be familiar with the normal anatomy of the pig and especially with the normal color and consistency of the different organs, with the lesions characteristic of the different specific and non-specific infectious diseases; with the kinds and frequency of mixed infections, and the character of the lesions resulting from the various mixed infections as found in connection with infectious diseases; with the sporadic conditions common to the pig; with all cases of poisoning; with all organic diseases, and their effect upon the individual; with the frequency of lesions usually chronic in nature that are common to the great majority of pigs that are apparently in perfect health; with the clinical symptoms and lesions that are associated with the different parasitic infestations, and finally with the many cases of unthriftiness and general ill health that are apparently associated with some intrinsic cause. When we come to know the outstanding characters of all the above conditions the diagnosis of diseases of swine will become much more simple, and it will not be unreasonable to expect that the veterinarian will be able to determine the condition of an individual pig with the same degree of accuracy as is common in the case of the diseases of horses and cattle. Therefore, I wish to emphasize the great necessity for an early bringing together of the facts and general knowledge of the diseases of swine as they occur under all conditions and in all classes and types of swine so that they can be put into the hands of the every-day practitioner for his guidance and use in the diagnosis, prevention, and treatment of all the diseased conditions met with in pigs, a species of animal the importance and consideration of which is the very life of the work of the veterinarian in a considerable area of our great country.

It is, of course, not to be assumed that all of the different diseases of swine will have to be taken into consideration in the case of each individual or each herd where sickness exists. It is, however, necessary in most cases to take into consideration a number of diseases the history and clinical symptoms of which are more or less the same. A few years ago the average veterinarian when consulted regarding a sick herd of pigs would have called for a pig to autopsy without making a clinical study. Today the average veterinarian will state that he desires to see the herd even after he has held a postmortem examination. For purposes of illustration, let us consider some of the diseases

common to the pig. Experience has shown (in Iowa) that in a great many cases where a number of individuals in the herd are sick it is necessary to take into consideration the following diseases: hog cholera, hemorrhagic septicemia (all forms), infectious enteritis (or necrobacillosis), pneumonia, non-specific septicemia, parasites, poisoning (from brine and stock remedies), and salmonellosis. We have at our command certain characteristic features belonging to these different diseases that are brought out by the history, development, symptoms, morbid anatomy, etiology, and, from a perspective study of individuals, but especially of the herd, the herd picture that belongs with each of these conditions. In carrying out a differential diagnosis based upon the history, symptoms, and lesions and, so far as possible, etiology one would proceed on the basis of considering the more common and prevalent disease, the disease that results in the development of a typical symptomatology and morbid anatomy and a specific etiology where such is known and is possible of demonstration.

First, let me briefly mention a few of the characteristics of these diseases. In hog cholera we have in the majority of cases a history of a herd of pigs in good flesh dying more or less suddenly. The clinical picture is high temperature, depression, loss of appetite, remaining in the nest when called for feeding, exudation from eyes, unsteady gait, a weak squeal, diarrhoea, etc., a perspective view shows some dead, others seriously sick, others only showing slight evidence of ill health, and some still apparently normal, but a large percentage of these last frequently showing a high temperature. A postmortem will reveal lesions which we have come to recognize as being characteristic of the action of hog cholera virus. These are petechial hemorrhages on the kidney, mucous membrane of the bladder, large intestine, and respiratory tract, and subserous hemorrhages of the lungs, congestion and hemorrhages of the lymph glands, and in chronic cases typical button ulcers.

In hemorrhagic septicemia (acute form) we will have a history that an animal in good flesh dies suddenly. No other animals in the herd are showing symptoms and no high temperatures will be found. In those instances where a few show symptoms it is in individuals and not a herd proposition. The symptoms are acute and of a nervous nature, running around the pen, bumping into objects or standing pushing against some object, throwing back of the head, clamping of the jaws, frothing at the mouth, etc. Morbid anatomy will be: congestion of the lymph glands, hemor-

rhages on the *thymus gland*, on the *heart*, respiratory mucous membrane, serous surface of intestine and bladder and sometimes in the lungs. It is unusual to find multiple hemorrhages on the kidney; the hemorrhagic areas in cases of acute septicemia are somewhat different in type from those met with in cholera. In cholera the characteristic hemorrhage is, barring complications, a definitely circumscribed hemorrhage area. In the case of hemorrhagic septicemia they are, as a rule, somewhat larger and irregular in outline. The distribution, however, is the more important point. A further step in the consideration of hemorrhagic septicemia is the possibility of demonstrating the microorganisms; this can be carried out by bacteriological methods and animal inoculation. In the case of mixed infection, which is not uncommon, a history of the disease, the clinical picture and the postmortem findings with the percentage of the animals affected will enable one in most cases to make a positive diagnosis.

The outstanding characteristics of infectious enteritis (necrobacillosis) are the fact that the disease comes on gradually, is most commonly encountered in shoats and especially those that have been purchased at the stock centers and shipped to the farm for feeding. The disease is characterized clinically by emaciation, absence of high temperature, good appetite at least until the latter stages of the disease, and small percentage of deaths, the losses, however, vary in different outbreaks. In those cases where a considerable number of animals die in the early stages of the disease it is due to a secondary septicemia.

The characteristic morbid anatomy of this disease is, as is well known, an inflammation of the mucous membrane of the large intestine (cecum and colon), but may in some cases involve the ileum. The well-developed lesion, or what is usually considered to be characteristic, is a necrotic or diphtheritic form of enteritis. In the beginning the mucosa of the affected portion of the bowel appears irregularly congested, reddened, swollen, and greasy. Close observation will reveal an unevenness due to desquamation of the surface cells in one part and a swollen condition of the surrounding area. The process goes on until complete desquamation of the surface cells has taken place, leaving the intestine raw, rough, granular and uneven. Inflammatory exudation continues, and there develops the characteristic necrotic, membranous, or diphtheritic exudate over all portions. Through the formation of fibrin and inflammatory changes in the underlying structures the necrotic material becomes firmly adherent, the in-

testinal wall thick and tube-like in appearance and structure, and impossible of function. The inflammatory process not infrequently involves the serous coat with more or less severe peritonitis. There is usually an absence of lesions in other organs of the body; the liver may show atrophy or it may show inflammation and degeneration as a result of secondary infection. In case we find lesions or other evidence of septicemia they can be traced to the presence of various microorganisms representing invasion of the system following the enteritis. In case lesions are found suggesting hog cholera, its presence can usually be determined from a careful clinical study or following the post-mortem examination of several pigs in the herd. Minor lesions found pointing to hog cholera should be conservatively estimated except when supported by a cholera history and clinical symptoms. Pigs that have contracted enteritis as a result of shipping and passing through stockyards, and especially if vaccinated, frequently die suddenly, show extensive lesions, non-specific septicemia and intoxication, while in cases of enteritis in herds independent of vaccination and on premises free from cholera there are few deaths except after long periods of sickness characterized by extreme emaciation. The gross pathology of the internal organs is in general that of a degenerative atrophy, indicating malnutrition. Hemorrhagic septicemia in connection with infectious enteritis is usually secondary, almost never resulting in the loss of a large number of animals, and can be diagnosed by carrying out steps for hemorrhagic septicemia.

PNEUMONIA.

Experience would seem to indicate that we have, independent of other diseases, at least four separate forms of pneumonia in the pig. First comes what I would term infectious or contagious pneumonia, very probably a pneumonic form of hemorrhagic septicemia as occurs in cattle. Second, pneumonia from the action of non-specific microorganisms that have gained entrance to the lung through conditions that can be grouped as predisposing causes, but especially in connection with poor ventilation. There are many cases on record where animals suffering from a more or less serious form of pneumonia have, following a proper ventilation of quarters, given no further trouble. Under the third division of pneumonia in pigs I would put all cases of inflammation of the lungs that are associated with other infectious diseases. Experience has shown that these conditions are common

and that upon proper control of the primary disease (Ex. hog cholera) the pneumonia will disappear from the herd. The fourth form is inflammation of the lung brought on primarily from the presence of the lung worm (*Strongylus paradoxus*). We sometimes find what is commonly termed nodular pneumonia, but as a result of the examination of a large number of these cases it would seem that they would come, for the present at least, under the non-specific infectious pneumonias, or may in cases be associated with the verminous pneumonia. Inflammation of the lungs in pigs is rather frequent and occurs as an independent condition having many predisposing causes, as well as a possible specific bacterial cause. It is a condition very frequently found in connection with cholera; hemorrhagic septicemia less frequently in connection with enteritis from the presence of lung worms, etc., symptoms of difficult breathing and pneumonia are not uncommon in cases of severe parasitic infestation (ascariasis) and in any condition where changes in the blood reduce its oxygen-carrying power. The first consideration in cases of individuals where symptoms and lesions of pneumonia are found would be to determine whether it was primary or secondary. If secondary to any of our infectious diseases, the handling of the herd would be on the basis of the infectious disease, the pneumonia ultimately disappearing. In the absence of other infection, or, in other words, if the pneumonia is primary and the only cause of sickness and death, relief will come in the majority of cases from a study of the conditions under which the animals are kept, and from a general elimination and correction of any or all conditions that might favor the development of pneumonia.

Non-specific septicemia of pigs is more or less common; the animal frequently dies suddenly and shows lesions of degeneration in the various organs of the body. The type of hemorrhages and their distribution is usually quite different from those seen in hog cholera, but may more or less closely resemble those of hemorrhagic septicemia; however, before decomposition sets in, the blood in the case of hemorrhagic septicemia is practically normal in appearance, while in practically every case of non-specific septicemia there is a marked hemolysis of the blood. Non-specific septicemia is further rather frequently associated with some localized lesion, abscess, etc., that plainly show the avenue of entrance. In case one is unable to make a differential diagnosis from the clinical history or morbid anatomy a bacterio-

logical examination of the blood will usually clear up any or all points.

In cases of parasitism (ascariasis) we get a herd picture of round worm infestation, a rather typical symptomatology, and, upon postmortem, the finding of the parasite completes the step necessary to make a diagnosis, *provided one is careful to make sure that no lesions of a more serious disease exist.*

POISONING, BRINE POISONING, ETC.

During the last few years cases of brine poisoning have been brought to my attention in a way which shows that this condition is not uncommon. In every instance the cause of sickness was thought to be due to cholera and has caused considerable trouble to those attempting to make a diagnosis. I would further include brine poisoning in connection with the other diseases mentioned because it tends to illustrate the importance of one's knowing and keeping in mind the possibility of cases of poisoning in connection with infectious diseases. Brine poisoning has, in my experience, come from two sources: First, those cases where animals accidentally have access to salt or brine that have been used in pickling meats. Second, it comes from feeding too much salt and in most cases this salt is given in connection with stock foods and stock remedies. In most cases of brine poisoning it has been in otherwise healthy herds, and the animals have died suddenly from no apparent cause. In cases of brine poisoning from highly concentrated solution death is usually sudden and there is an absence of lesions with the exception that the carcasses do not rapidly undergo decomposition and the internal organs, liver, spleen, etc., have a firm, reddish, pickled appearance. In case of brine poisoning where the salt is acquired from eating stock foods, or drinking slop that contains a large quantity of salt, there will develop inflammatory changes in various organs of the body. In one case the outstanding lesions were nephritis and the transudation of fluid into the peritoneal and thoracic cavities. The loss of animals from acute brine poisoning is serious, and especially so at this time, and should be prevented as far as possible; but the poisoning of pigs and other live stock from the feeding of waste from biscuit factories that contains a large percentage of salt, or from the use of salvet, is criminal.

SALMONELLOSIS.

Under this heading I wish to include a condition, based on symptoms and morbid anatomy, not etiologically, that is not in-

frequently met with in pigs, the symptoms and lesions of which correspond to those reported as developing following the inoculation of pigs with the bacillus suispestifer. The symptoms are of a more or less chronic sickness, only a small percentage of the herd being affected, with slight loss of appetite, loss of flesh, depression, temperature not above 104°F., difficult breathing without the occurrence of lesions in the lungs. The lesions are enlarged dark tense friable spleen (not especially engorged with blood) and acute parenchymatous degeneration of the liver. The liver is yellowish in color, often slightly bile-stained, and the fat tissues and subcutaneous structures may show slight or marked icterus. The lymph glands are pale and abnormally juicy, and the intestinal mucosa is clean throughout. Pigs killed in the early stages show a thin, bright-red blood; if the animal has died the blood is dark, with more or less evidence of hemolysis.

In regard to the diagnosis of sporadic and organic conditions and their differentiation from the acute and chronic infectious diseases of swine we have the following to consider: Organic diseases in pigs are common; they are seldom recognized until well advanced. Death in the majority of instances takes place suddenly, and, therefore, in cases of sickness or death from any of the various organic conditions the question of a differential diagnosis always comes up. Let us take for purposes of illustration some of the more commonly encountered organic diseases that frequently terminate fatally. Diseases of the kidney, diseases of the liver, diseases of the lungs, diseases of the heart, (parasitic diseases) or any chronic inflammatory condition as found affecting the spleen, pancreas, peritoneum, etc. Of the organic diseases of the pig, inflammatory and degenerative changes in the kidney, with the exception of the lungs, are the most frequently encountered; they take on the form of acute degenerative and hemorrhagic nephritis, cystic nephritis, chronic suppurative nephritis terminating not uncommonly in hydro-nephrosis and chronic indurative nephritis. Our records show that a number of pigs apparently in perfect physical condition have died suddenly from the direct and indirect effect of these conditions, especially the suppurative forms of nephritis, and in every case the owners suspected cholera or some infectious condition as being the cause of death. Evidence of septicemia is not common in connection with diseases of the kidney. Inflammatory changes in the liver of the pig are common, but in my experience are not as serious as are inflammatory conditions in

the kidneys. Chronic interlobular hepatitis and multiple abscesses of the liver are frequent in the pig and are no doubt directly and indirectly the cause of death in a great many cases. Inflammation of the liver in pigs frequently terminates in septicemia. Inflammation of the lungs in its many forms and serious results is too well known to need more than mention; necrosis and abscess formation frequently characterize the final change and terminates in sudden death of the animal through septicemia or intoxication. The history and clinical picture of pneumonia usually stands out in contrast to the symptoms seen in other organic diseases; therefore, our problem is to determine whether the pneumonia is primary or secondary to some general infectious disease. Of the diseases of the heart inflammatory changes affecting the pericardium and endocardium are frequent and serious. Pericarditis may occur as an independent condition, but is more often associated with inflammation of the lungs. Pneumo-pericarditis is a condition that results in the death of altogether too many young pigs. Of all the inflammatory diseases of the heart, vegetative endocarditis is probably the more common and occurs in every case, where we have been able to make observations, from invasion of the blood with non-specific pyogenic organisms, as a distinct primary condition, and in connection with infections following vaccination. The point of entrance is frequently obscure. This condition in pigs has to my knowledge been the cause of some extensive losses in herds. The development of the vegetative growths on the mural endocardium of the heart and valves takes place more rapidly than does the destruction of the blood from bacterial invasion; an engorged spleen is a common associated condition. The morbid anatomy of pigs dying from lesions of vegetative endocarditis resembles in many details the pathology given for swine erysipelas.

While I feel that we may well congratulate ourselves on the progress that has been made in regard to the diagnosis and control of the diseases of swine (for I am sure that we are far and away ahead, in this respect, of any country in the world), we must not be satisfied with what we have done, nor should we ignore the weak places that do exist. The information that we have and that is coming daily from the three great agencies mentioned is of the best. Our greatest need at the present time is that the great mass of valuable data furnished by the Federal and state work and the very fundamental knowledge gained by the practitioner of veterinary medicine, from his daily contact

with these conditions, should, through some concerted effort, be correlated and systematically compiled so as to make it available and comprehensive to those of the profession who are making an honest effort to cope with the problem. The medical world is still struggling with many unmastered conditions as created by nature; therefore, as a profession, we should try to impress upon every veterinarian the importance of making a careful study and record of all conditions found. We should make a special effort to search for the symptoms with the idea of developing a symptomatology for use in the diagnosis of diseases of swine that is reliable and therefore based on etiology and the morbid conditions of pigs as they are known to occur in the field today.

My plea is that we, as a profession, should direct our every effort to a more thorough understanding of the many morbid conditions common to swine, their *differentiation* and *diagnosis*, that we may be able to formulate methods both curative and preventive that will be especially directed at the particular disease; that we may prevent the many and serious losses that come from conditions other than cholera and thus make available through increased production and production at a reduced cost the many important products from the pig in quantity to supply the demand and at a price that the circumstances of the many will be able to meet.

APPENDIX.

A partial list of the infectious and organic diseases more or less commonly met with in swine:

Tuberculosis

Hog cholera

Hemorrhagic septicemia

(a) Acute hemorrhagic septicemia

(b) Infectious pneumonia

(c) Cutaneous form

Infectious enteritis or necrobacillosis

Salmonellosis

Tetanus

Actinomycosis

Rabies

Non-specific septicemia

Polyarthrititis

Stomatitis

Infectious rhinitis

(a) sniffles

(b) bull-nose

Pneumonia, bacterial (several forms)

Pneumonia, verminous

Poisoning (salt or brine)

Unthriftiness

Paraplegia

Scirrhus cord

Heat stroke

Infectious laryngitis

Anorexia from unpalatable food

Enteritis in young pigs from green rye pasture

Malignant oedema

Spirochaetosis

Swine erysipelas

Leukemia, multiple lymphoma

Tumors

Pyobacillosis

Hernia

Peritonitis

Rachitis

Foot and mouth disease

Anthrax.

Diseases (Organic).

Nephritis

(a) acute

(b) chronic interstitial induration

(c) chronic suppurative

(d) hydronephrosis

(e) cystic nephritis

(f) parasitic nephritis

(g) toxic nephritis

cystitis

urinary calculi

Hepatitis

Acute degenerative

Acute suppurative

Chronic interlobular

Chronic focal fibrosis

Parasitic

- Pneumonia
 - Infectious pneumonia (several forms)
 - Verminous pneumonia
- Sclerodermatitis
 - Eczema
 - Urticaria
 - Erythema
 - Granular eruption
- Pericarditis
 - Vegetative endocarditis
- Inflammation of the pancreas
 - Abscess of the brain
- Mange
 - Sarcoptic
 - Demodectic
- Louisness
- Trichinosis
- Intestinal and gastric parasites
 - Stomach worm
 - Ascariasis
 - Esophagastomiasis
 - Trichocephalus
 - Echinorhynchus gigas
- Kidney worm
- Liver fluke.

With three exceptions, all of the conditions mentioned in the list have been identified in Iowa during the last ten years.

EXPERIMENTS IN AVIAN TOXICOLOGY.

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It is a well-established fact that considerable variations in tolerance to drugs of a toxic nature exist in animals of different species. While these variations have been pointed out in the case of mammalian species, little information is found in toxicologic literature on the toxicity to the avian class of drugs or poisonous substances which may be of value in the treatment or control of bird diseases.

The following experiments were undertaken for the purpose of determining the toxic doses for fowls of the more commonly

used medicinal agents and of poisonous substances to which fowls not infrequently have access. No attempt was made to fix the toxic dose in certain instances where the experimental substance proved non-toxic when given in comparatively large quantities.

In each experiment, unless otherwise stated, fluids were administered directly into the esophagus or crop by means of a pipette and solids were given in gelatin capsules per os.

Medium-sized healthy mature hens weighing between 3 and 4 pounds were usually employed. Those of larger size are designated.

All doses were given while the crop contained a normal amount of food.

CONCLUSIONS.

In general, fowls may be considered as having approximately the same susceptibility to toxic substances as medium-sized dogs. They are more resistant to such substances as calomel, strychnine and tartar emetic, and less resistant to carbolic acid, salicylic acid and potassium cyanide.

In treating outbreaks of disease in fowls, it is of great advantage to employ the drinking water as a vehicle for medicinal agents. It is shown that fowls are not visibly affected by drinking solutions of bichloride of mercury 1-6000, carbolic acid 1-1000, permanganate of potash 1-500, and crude catechu 1-500 for periods of 18 to 21 days.

It is interesting to note that the crop not only serves as a reservoir for food, but that absorption through its wall is very rapid, symptoms appearing in from two to five minutes after the administration of such substances as ammonium chloride in solution, potassium cyanide and strychnine sulphate.

AMMONIUM CHLORIDE.

Lethal dose. 60 grains; 45 grains in solution (15 cc of 20% solution).

Toxic dose. Same as lethal.

Non-toxic dose. 15 to 45 grains.

EXPERIMENTS.

I.

July 8, 1918, 2 p. m. Fowl received 60 grains of ammonium chloride.

July 9. Fowl droopy, weak in legs, sitting.

July 10. Same as July 9.

July 11. Fowl died before 8 a. m.

Autopsy Notes.—No lesions were apparent.

II.

February 20, 1918, 11:05 a. m. Fowl received 45 grains of ammonium chloride in 12 cc of water (15 cc of a 20% solution).

Stimulating effect observed almost immediately. Fowl had not been very active previously. After administration of the chloride, bird began scratching energetically and singing more than the neighboring untreated fowls. Would drop wing on one side in imitation of a rooster and would crowd up against the side of the cage which separated her from another hen. Would peck at hen through the cage.

11:20 a. m. Same as above.

11:25 a. m. Drinking considerable water.

11:30 a. m. Excitement has passed.

1:00 p. m. Fowl has a sleepy appearance. Bunches up somewhat when not disturbed.

4:30 p. m. Not active. Bunched up.

February 21, 1918, 9:00 a. m. Fowl sleepy and bunched up. Stands erect, but wobbles when disturbed.

4:30 p. m. Fowl droopy. Bunched up. Feathers ruffled.

February 22. Above condition more intensified.

February 23. Fowl died before 8:00 a. m.

Autopsy Notes.—Crop filled with food. Lungs pale. Other organs apparently normal.

III.

June 25, 1918, 10:00 a. m. Fowl received 45 grains of ammonium chloride. Result: No effect was apparent.

IV.

February 28, 1918, 10:05 a. m. Fowl received 15 grains of ammonium chloride. Result: No effect was apparent.

ARSENIOUS ACID.

Lethal dose. 5 grains.

Toxic dose. 5 grains.

Non-toxic dose. 1 to 3 grains.

EXPERIMENTS.

I.

June 10, 1918, 10:00 a. m. Fowl received 5 grains of arsenious acid.

4:00 p. m. Fowl somewhat droopy. Droppings greenish.

July 11, 9:00 a. m. Fowl droopy. Droppings greenish and watery.

12:00 m. Fowl weak. Comb dark.

1:30 p. m. Fowl dead.

Autopsy Notes.—Food in crop and gizzard. Catarrhal exudate in the proventriculus. Internal membrane of the gizzard is necrosed and separated from wall at proventriculus entrance. Contents of gizzard greenish. Duodenum shows a catarrhal condition. Is pale in color. Contents of intestine are fluid and of greenish tinge. Liver is mottled. Rigor mortis is marked one hour after death.

II.

July 8, 1918, 2:00 p. m. Fowl received 3 grains of arsenious acid. Result: No effect was apparent.

III.

June 25, 1918, 10:00 a. m. Fowl received 1 grain arsenious acid. Result: No effect was apparent.

BICHLORIDE OF MERCURY.

(Mercuric Chloride, Corrosive Sublimate)

Lethal dose. 4 grains.

Toxic dose. 4 grains.

Non-toxic dose. 3 grains.

1-6000 solution as drinking water for 18 days.

EXPERIMENTS.

I.

June 10, 1918, 10:00 a. m. Fowl received 5 grains of bichloride of mercury.

10:45 a. m. Spasmodic movements of the crop for several minutes.

11:45 a. m. Droopy.

2:00 p. m. Sitting. Legs weak. Drooping.

4:00 p. m. Sitting. Cannot stand. Marked depression.

June 11, 1918, 9:00 a. m. Fowl found dead.

Autopsy Notes.—No food in crop. Gizzard filled with food. Mucous membrane of dependent portion of crop is whitened and thickened as a result of coagulation necrosis. Proventriculus shows severe catarrhal condition. Mucosa at entrance to gizzard is necrosed. Membrane of posterior portion of gizzard is sepa-

rated from the gizzard wall, the space being filled with clear fluid. Mucosa of first third of intestine is exfoliated and remainder of small intestine shows a severe catarrhal condition. Other organs apparently normal.

II.

August 12, 1918, 2:20 p. m. Four-pound fowl received 4 grains of bichloride of mercury.

4:30 p. m. No change noted.

August 13, 9:00 a. m. Legs very weak. Bird cannot walk. Sits down. Otherwise looks bright and normal.

August 14, 9:00 a. m. Fowl cannot stand.

August 15, 9:00 a. m. Fowl dead.

Autopsy Notes.—Small amount of oats in crop. Crop wall is thickened, pale, mucosa is coagulated. Subcutaneous tissue surrounding crop and esophagus is infiltrated with a greenish gelatinous exudate. Proventriculus shows several hemorrhagic points on mucosa. Gizzard contains a considerable quantity of greenish colored food. Mucosa of small intestine is pale. Kidney is very pale and studded with minute white spots. Air sac membranes in abdominal cavity are thickened. The abdominal cavity contains 6 ounces of a thick, somewhat viscid, fluid with a slight greenish tinge.

III.

February 28, 1918, 10:00 a. m. Fowl received a tablet containing 3 grains of bichloride of mercury and 3 grains of ammonium chloride. Result: No effect was apparent.

IV.

May 27, 1918, 10:00 a. m. Gave fowl 1.4 grains of bichloride of mercury in feed. Fowl had not been fed for 24 hours, crop nearly empty.

3:00 p. m. Gave fowl another 1.4 grains of bichloride of mercury in feed. Result: No effect was apparent as a result of fowl consuming 2.8 grains of bichloride of mercury in feed in one day.

V.

June 14, 1918. Gave three fowls a 1-6000 solution of bichloride of mercury as drinking water. Fowls drank solution for a period of 18 days, consuming about 2500 cc each. No other water was given. Result: No effect was apparent.

VI.

June 12 to 14, 1918. Several fowls which had not received drinking water for 24 hours were given bichloride of mercury solutions of 1-2000 and 1-4000 as drinking water. Fowls tasted solutions and refused to drink. Solutions were clear. At intervals the solutions were again placed in the fowls' cages with the same result as above. After taking 1 to 3 swallows of solution the fowl shakes its head, rubs beak in the litter and elevates the feathers on the neck for a few moments. Gave fresh water and fowls drank eagerly.

BISMUTH SUBNITRATE.

Non-toxic dose. $\frac{1}{4}$ ounce +.

EXPERIMENT.

I.

February 20, 1918, 9:50 a. m. Fowl received $\frac{1}{4}$ ounce of bismuth subnitrate. Result: No effect was apparent.

CALCIUM OXIDE (QUICKLIME).

Toxic dose. $1\frac{1}{4}$ drams.

Non-toxic dose. $\frac{1}{2}$ dram.

EXPERIMENTS.

I.

August 15, 1918, 9:40 a. m. Gave 3-pound fowl $1\frac{1}{4}$ drams of calcium oxide.

August 16. Fowl is somewhat droopy. Droppings are greenish in color.

August 17. Fowl is dull in appearance.

August 18. Fowl is dull in appearance.

August 19. Fowl appears normal.

II.

August 27, 1918, 10:30 a. m. Gave $3\frac{1}{2}$ -pound fowl $\frac{1}{2}$ dram of calcium oxide. Result: No effect was apparent.

CALOMEL.

(Mercurous Chloride)

Non-toxic dose. 30 grains.

EXPERIMENT.

I.

February 7, 1918, 10:30 a. m. Fowl received 30 grains of calomel.

February 8, 9:00 a. m. Evidence of purging. Droppings greenish. Fowl has not been visibly affected otherwise.

CARBOLIC ACID.

Toxic dose. 5 grains in solution (11 cc of 3% solution), 3.75 grains in solution (12.5 cc of 2% solution).

Non-toxic dose. 2 grains in solution (13 cc of 1% solution). 1-1000 solution as drinking water for 18 days.

EXPERIMENTS.

I.

August 12, 1918, 2:20 p. m. Five-pound fowl received 11 cc of 3% carbolic acid solution (5 grains carbolic acid).

2:22 p. m. Crop puffed out somewhat.

3:00 p. m. Fowl has shown some droopiness since receiving the solution.

3:45 p. m. Fowl apparently normal.

4:30 p. m. Fowl apparently normal.

August 13. Fowl appears normal.

II.

February 2, 1918, 10:00 a. m. Three-pound fowl received 12.5 cc of 2% carbolic acid solution (3.75 grains carbolic acid).

11:00 a. m. Fowl shows dullness.

2:00 p. m. Fowl appears normal.

February 3. Fowl is apparently normal.

III.

August 27, 1918, 10:30 a. m. Gave four-pound fowl 13 cc of 1% carbolic acid solution (2 grains carbolic acid). Result: No effect was apparent.

IV.

June 14, 1918. Gave three fowls a 1-1000 solution of carbolic acid as drinking water for a period of 18 days. Each fowl consumed about 2500 cc. No other water was given. Result: No effect was apparent in any of the fowls.

V.

June 14, 1918. Several fowls were given carbolic acid solutions of 1-250 and 1-500 as drinking water. Fowls refused to drink the solutions. Gave fresh water and fowls drank eagerly.

CASTOR OIL.

Non-toxic dose. 6½ drams +.

EXPERIMENT.

I.

February 7, 1918, 10:30 a. m. Fowl received $6\frac{1}{2}$ drams of castor oil.

February 8, 1918, 9:00 a. m. Evidence of moderate purging. Droppings greenish. Fowl was not visibly affected otherwise.

CATECHU (CRUDE).

Non-toxic dose. 1-500 solution +.

EXPERIMENT.

I.

June 10, 1918. Gave fowl a 1-500 solution of crude catechu as drinking water. Fowl drank solution freely.

July 1, 1918. Fowl drank 3000 cc of above solution in 21 days. No other water was given. No constipation was observed. No change in fowl was apparent.

CHLORIDE OF LIME.

Non-toxic dose. $\frac{3}{4}$ to $1\frac{1}{2}$ drams.

EXPERIMENTS.

I.

August 15, 1918, 10:30 a. m. Five-pound fowl received $1\frac{1}{2}$ drams of chloride of lime. Result: No effect was apparent.

II.

August 13, 1918, 2:30 p. m. Five-pound fowl received $\frac{3}{4}$ dram of chloride of lime. Result: No effect was apparent.

COPPER SULPHATE.

(Blue Stone)

Lethal dose. 20 grains. 15 grains in solution.

Toxic dose. Same as lethal.

Non-toxic dose. 5 to 15 grains.

EXPERIMENTS.

I.

July 8, 1918, 2:00 p. m. Fowl received 20 grains of copper sulphate.

4:00 p. m. No change apparent.

July 9. Fowl droopy. Sitting.

July 10. Fowl droopy. Sitting.

July 11, 9:00 a. m. Fowl dead.

Autopsy Notes.—Pharynx and Esophagus shows coagulation necrosis of the mucosa. Mucosa of crop exfoliated. Crop filled with water and greenish catarrhal exudate. Lower esophagus shows coagulation necrosis of mucosa. Proventriculus shows severe catarrhal gastritis. Catarrhal enteritis. Entire intestine is filled with greenish catarrhal exudate

II.

February 2, 1918, 10:00 a. m. Fowl received 15 grains of copper sulphate in solution (10 cc of 10% solution). Fowl drank water continuously for 15 minutes and then became restless for about three minutes.

12:00 m. Dull.

2:00 p. m. Dull.

4:30 p. m. Dull.

February 3, 1918, 9:00 a. m. Fowl is droopy.

9:30 a. m. Convulsions developed and fowl died.

Autopsy Notes.—Crop normal. Distended with water. Considerable food in crop and gizzard. Mucosa of proventriculus intensely inflamed. Horny membrane of gizzard loosened near proventriculus opening. Hemorrhagic points in submucosa. Catarrhal enteritis is quite marked. Intestine contains considerable bluish fluid. Mesenteric fat and peritoneum is petechiated. Heart is in systole.

III.

June 25, 1918, 10:00 a. m. Fowl received 15 grains of copper sulphate. Result: No effect was apparent.

IV.

February 28, 1918, 10:10 a. m. Fowl received 5 grains of copper sulphate. Result: No effect was apparent.

ERGOT, F. E.

Non-toxic dose. $2\frac{1}{2}$ drams F. E. + = $2\frac{1}{2}$ drams of ergot.

EXPERIMENT.

I.

February 8, 1918, 10:30 a. m. Fowl received $2\frac{1}{2}$ drams of fluid extract of ergot with $2\frac{1}{2}$ drams of water. Result: No effect was apparent.

FERROUS SULPHATE.

(Copperas)

Non-toxic dose. 30 grains +.

EXPERIMENT.

I.

February 7, 1918, 10:30 a. m. Fowl received 30 grains of ferrous sulphate in solution (10 cc of 20% solution). Result: No effect was apparent.

IPECAC, F. E.

Lethal dose. 1 to 2 drams.

Toxic dose. 1 dram.

Non-toxic dose. $\frac{1}{2}$ to $\frac{3}{4}$ dram.

EXPERIMENTS.

I.

August 19, 1918, 1:10 p. m. Gave $4\frac{1}{2}$ -pound fowl 2 drams F. E. of Ipecac.

August 20. No apparent change.

August 21, 9:00 a. m. Greenish fluid droppings.

August 22, 9:00 a. m. Fowl dead.

Autopsy Notes.—Crop and gizzard filled with food. Mucosa of crop pale, slightly thickened. Lower esophagus and proventriculus showed a catarrhal condition. Several hemorrhagic points in proventriculus. Small area of internal lining of gizzard at entrance of proventriculus separated from gizzard wall. Mucosa of duodenum pale. Liver pale.

II.

August 19, 1918, 1:10 p. m. Gave 3-pound fowl $1\frac{1}{4}$ drams F. E. Ipecac.

August 20, 9:00 a. m. Fowl dead.

Autopsy Notes.—Some food in crop. Proventriculus showed a catarrhal condition. Hemorrhagic near entrance to gizzard. Membrane of gizzard easily separated near proventriculus opening. Liver is banded with light and dark stripes.

III.

August 27, 1918, 10:30 a. m. Gave $4\frac{1}{2}$ -pound fowl 1 dram of fluid extract of ipecac.

August 28. No change apparent.

August 29. Fowl dull.

August 30. Fowl died at 8:00 a. m.

Autopsy Notes.—Crop and gizzard filled with food. Mucosa of proventriculus thickened and catarrhal. Submucosa of gizzard near proventricular opening hemorrhagic. Liver pale in spots and streaked with darker bands. Heart in systole.

IV.

August 12, 1918, 2:20 p. m. Gave 5-pound fowl $1\frac{1}{4}$ drams F. E. Ipecac.

August 14, 9:00 a. m. Fowl has shown no change.

August 15. Somewhat dull.

August 16. Somewhat dull.

August 17. Apparently normal.

V.

August 30, 1918, 10:30 a. m. Gave 4-pound fowl $\frac{3}{4}$ dram of fluid extract of Ipecac. Result: No effect was apparent.

VI.

August 30, 1918, 10:30 a. m. Gave 4-pound fowl $\frac{1}{2}$ dram of F. E. of Ipecac. Result: No effect was apparent.

LEAD OXIDE.

(Litharge)

Non-toxic dose. $1\frac{1}{4}$ drams +.

EXPERIMENT.

I.

August 15, 1918, 9:40 a. m. Five-pound fowl received $1\frac{1}{4}$ drams of lead oxide. Result: No effect was apparent.

MAGNESIUM SULPHATE.

(Epsom Salts)

Non-toxic dose. 1 dram in solution.

EXPERIMENT.

I.

February 7, 1918, 11:00 a. m. Fowl received 1 dram of Epsom salts in $4\frac{1}{2}$ drams of water.

February 8, 9:00 a. m. Evidence of moderate purging. Droppings fluid and brownish. Fowl was not visibly affected otherwise.

MALE FERN, F. E.

Toxic dose. $2\frac{1}{2}$ drams, F. E.

Non-toxic dose. $1\frac{1}{4}$ drams, F. E.

EXPERIMENTS.

I.

April 25, 1918, 11:15 a. m. Fowl received $2\frac{1}{2}$ drams of fluid extract of male fern.

- 11:30 a. m. Fowl sleepy. Droopy.
11:45 a. m. Fowl sleepy. Sitting.
12:00 m. Legs very weak.
1:00 p. m. Very weak. Can raise itself on its feet with difficulty.
2:45 p. m. Sitting. Has great difficulty in attempting to stand.
4:00 p. m. Standing, but legs are still weak.
April 26, 1918, 9:00 a. m. Fowl has recovered.

II.

July 8, 1918, 2:00 p. m. Fowl received $1\frac{1}{4}$ drams of fluid extract of male fern. Result: No effect was apparent.

POTASSIUM CYANIDE.

- Lethal dose. 1 to 2 grains.
Toxic dose. $\frac{1}{10}$ to $\frac{1}{2}$ grain.

EXPERIMENTS.

I.

February 20, 1918, 10:15 a. m. Gave fowl a 2-grain crystal of potassium cyanide per os. Symptoms appeared in four minutes. Fowl had difficulty in maintaining its balance. Dropped to the floor. After several minutes it fluttered around the cage for about 5 seconds, went down again, became comatose and was dead in 12 minutes after swallowing the cyanide.

II.

February 20, 10:30 a. m. Gave fowl a 1-grain crystal of potassium cyanide per os. Symptoms appeared in two minutes. Fowl became droopy, stood for several minutes with head dropped to floor (limber neck), fell to floor in a comatose state and was dead 13 minutes after swallowing the cyanide. Did not struggle at any time.

III.

July 8, 1918, 2:00 p. m. Gave fowl a $\frac{1}{2}$ -grain crystal of potassium cyanide per os.

2:02 p. m. Fowl jumped suddenly, striking top of cage. Stands very erect. Breathing more rapidly. Mouth open.

2:05 p. m. Unsteady on legs. Wings drooped. Distressed expression.

2:20 p. m. Fowl lying down. Continues breathing through mouth.

3:00 p. m. Same as above. Fowl can stand when forced up.

4:00 p. m. Fowl has recovered.

IV.

February 28, 10:15 a. m. Gave fowl $\frac{1}{5}$ grain of potassium cyanide in gelatin capsule per os.

10:23 a. m. Fowl breathing rapidly through the mouth.

10:25 a. m. Wings drooping. Has attempted to pass droppings four times, each time a very small amount has been passed.

10:45 a. m. Same as above. Getting sleepy.

11:00 a. m. Same as above. Sleepy.

12:00 m. No change except that breathing is not as rapid.

1:30 p. m. Fowl has recovered.

V.

August 12, 2:23 p. m. Gave 3-pound fowl $\frac{1}{10}$ grain potassium cyanide in small piece per os.

2:26 p. m. Breathing rapidly.

2:30 p. m. Sitting.

3:00 p. m. Has depressed appearance. Drowsy. Half sitting posture on being placed on feet. Sits again. Breathing not so rapid.

3:45 p. m. Standing. Some droopiness apparent. Breathing is normal and fowl is recovering.

4:30 p. m. Apparently normal.

August 13, 9:00 a. m. Fowl is apparently normal.

POTASSIUM PERMANGANATE.

Lethal dose. 30 grains.

Toxic dose. 30 grains.

Non-toxic dose. 15 grains. 15 grains in solution. 1-500 solution as drinking water.

EXPERIMENTS.

I.

June 25, 1918, 10:00 a. m. Gave fowl 30 grains of potassium permanganate.

4:30 p. m. No symptoms noticed.

June 26, 9:00 a. m. Fowl died during night.

Autopsy Notes.—Crop filled with oats and some water. Dependent portion of crop charred and softened. Apparently the mucous membrane was eaten through. Submucosa blackened; also skin on lower surface of crop and adjacent breast. Thick

coating of moist black material on lower mucosa of crop. Probably remains of permanganate. Several blood clots in crop. Remainder of crop mucosa normal. All other organs normal. Permanganate had not left crop as far as could be determined. Apparently hemorrhage had occurred in subcutaneous tissue and blood had been oxidized.

II.

February 2, 1918, 10:00 a. m. Gave fowl 15 grains of potassium permanganate in solution (30 cc of 3 $\frac{1}{3}$ % solution). Result: No effect was apparent.

III.

July 8, 2:00 p. m. Gave fowl 15 grains of potassium permanganate. Result: No effect was apparent.

IV.

June 10, 10:00 a. m. Gave fowl a 1-500 solution of potassium permanganate as drinking water. Fowl drank solution freely.

July 1. Fowl drank about 3000 cc of above solution in 21 days. No other water was given. Result: No effect was apparent.

SALICYLIC ACID.

Lethal dose. 30 to 75 grains.

Toxic dose. 30 grains.

Non-toxic dose. 15 grains.

EXPERIMENTS.

I.

June 10, 1918, 10:00 a. m. Gave fowl 75 grains of salicylic acid.

11:30 a. m. Wings dropped. Fowl sleepy. Droopy.

12:00 m. Condition growing worse.

1:30 p. m. Bird dead.

Autopsy Notes.—Crop filled with oats. No trace of the three gelatin capsules. At least half of the salicylic acid administered remains in the esophagus. Mucous membrane of mouth, esophagus, crop and lower esophagus is white from action of the salicylic acid. Protoplasm is apparently coagulated. Not so severe in lower esophagus and crop as in upper esophagus and mouth. No other lesions apparent.

II.

June 25, 1918, 10:00 a. m. Gave fowl 30 grains of salicylic acid.

4:00 p. m. Fowl droopy.

June 26, 9:00 a. m. Fowl lying on side in comatose condition.

2:30 p. m. Fowl died.

Autopsy Notes.—Crop filled with food and some white material, probably salicylic acid. Dependent portion of wall of crop thickened, wrinkled and coagulated, white in color. Mucosa of lower esophagus and proventriculus whitened. Intestine mildly hemorrhagic throughout its length. Wall congested. Liver dark, capsule thickened in one place. Spleen soft. Ovary showed B. pullorum infection.

III.

July 8, 2:00 p. m. Gave fowl 15 grains of salicylic acid. Result: No effect was apparent.

SANTONIN.

Non-toxic dose. 5 to 15 grains.

EXPERIMENTS.

I.

June 25, 10:00 a. m. Gave fowl 15 grains of santonin. Result: No effect was apparent.

II.

June 10, 10:00 a. m. Gave fowl 5 grains of santonin. Result: No effect was apparent.

SODIUM CHLORIDE.

(Common Salt)

Lethal dose. $2\frac{1}{2}$ drams. $2\frac{1}{2}$ drams in solution.

Toxic dose. Same as lethal.

Non-toxic dose. $1\frac{1}{4}$ to $1\frac{3}{4}$ drams.

EXPERIMENTS.

I.

February 2, 10:00 a. m. Gave fowl $2\frac{1}{2}$ drams of sodium chloride in solution (40 cc of 25% sol.).

11:00 a. m. Fowl is dull.

12:00 m. Fowl is dull.

2:00 p. m. Fowl is dull. Droopy. Sleepy.

4:30 p. m. Fowl is sitting. Sleepy.

February 3, 9:00 a. m. Fowl found dead.

Autopsy Notes.—Considerable food in crop and gizzard. Crop, proventriculus and gizzard are normal. Small intestine normal. Rectum slightly inflamed. Liver darkened. Kidney congested. Heart is systole.

II.

June 25, 10:00 a. m. Gave fowl $2\frac{1}{2}$ drams of sodium chloride.

June 26, 9:00 a. m. Fowl droopy.

1:00 p. m. Paralyzed.

4:00 p. m. Paralyzed. Shows condition known as wry neck.

June 27, 9:00 a. m. Paralyzed. Lying on side. Wry neck.

11:00 a. m. Died.

Autopsy Notes.—Crop gorged with food. Mucosa of crop white; cooked appearance, thickened. Severe catarrh of proventriculus; tenacious mucous exudate. Horny membrane of gizzard easily removed. Duodenum showed slight congestion. Catarrh of duodenum. Liver darkened.

III.

July 8, 2:00 p. m. Gave fowl $1\frac{3}{4}$ drams of sodium chloride. Result: No effect was apparent.

IV.

February 28, 10:00 a. m. Gave fowl $11\frac{1}{4}$ drams of sodium chloride.

10:30 a. m. Fowl shows a moderate thirst. Results: No effects were apparent.

SODIUM NITRATE.

Lethal dose. $2\frac{1}{2}$ drams.

Toxic dose. $1\frac{1}{4}$ drams.

Non-toxic dose. $\frac{1}{2}$ dram.

EXPERIMENTS.

I.

February 20, 9:50 a. m. Gave fowl $2\frac{1}{2}$ drams of sodium nitrate.

11:00 a. m. Fowl dull and droopy.

12:00 m. Fowl shows increased dullness, droopiness and sleepiness. Sitting.

1:00 p. m. Fowl is wideawake but dull. Is in a sitting posture. Legs paralyzed, cannot stand.

3:00 p. m. Fowl lying on its side, cannot move, legs paralyzed. Greatly depressed. Death appears imminent.

4:30 p. m. No change from above.

February 21, 9:00 a. m. Fowl died during night.

Autopsy Notes.—Crop wall and skin covering it dehydrated. These membranes were transparent, dry and tough. Proventriculus shows severe catarrhal exudate. Inner membrane of gizzard separated from submucosa. Considerable fluid beneath inner membrane. Catarrhal enteritis. Duodenal mucosa congested somewhat. Liver dark. Spleen pale. Pancreas enlarged and infiltrated. Heart in systole. Considerable food in crop.

II.

February 28, 1918, 10:00 a. m. Gave fowl $1\frac{1}{4}$ drams of sodium nitrate.

1:30 p. m. No change is apparent.

3:30 p. m. Fowl bunched up and sleeping. On being aroused displays marked thirst. Becomes droopy and sleepy again.

4:30 p. m. Fowl droopy and shows thirst.

March 1, 9:00 a. m. Fowl quiet. Sits down. Comb and wattles dark red.

12:00 m. Same as above.

1:30 p. m. Fowl paralyzed, no use of feet, prostrated.

3:30 p. m. Same as above. Comb blackening at the tips.

4:30 p. m. Same.

March 2, 9:00 a. m. Fowl up, normal in appearance but quiet on being handled. Comb a bright red.

3:00 p. m. Fowl apparently normal.

III.

June 25, 10:00 a. m. Gave fowl $\frac{1}{2}$ dram of sodium nitrate. Result. No effect was apparent.

STRYCHNINE SULPHATE.

Lethal dose. 2 grains to $3\frac{1}{2}$ -pound fowl.

Toxic dose. 2 to 3 grains to 5-pound fowl. 1.5 grains to 3-pound fowl. 8 cc F. E. nux vomica = 1.2 grains to 3-pound fowl.

Non-toxic dose. 2 grains to 5-pound fowl.

EXPERIMENTS.

I.

August 12, 2:22 p. m. Gave $3\frac{1}{2}$ -pound fowl 2 grains of strychnine sulphate in gelatin capsule per os.

2:30 p. m. Breathing more rapidly. Some unsteadiness of legs.

2:31 p. m. Convulsion lasting ten seconds. Fowl down on side.

2:32 p. m. Slight convulsion. Rapid breathing.

2:35 p. m. Slight convulsion.

2:36 p. m. Fowl stretched out at length. Rapid shivering of legs.

2:40 p. m. Fowl dead.

Autopsy Notes.—Fowl stiff. Considerable fluid in crop. Heart in systole. Liver slightly congested. Comb, wattles and face darkened.

II.

August 12, 2:23 p. m. Gave 5-pound fowl 3 grains of strychnine sulphate in gelatin capsule per os.

2:45 p. m. Breathing rapidly. Unsteady on legs.

2:50 p. m. Sitting.

2:55 p. m. Standing. Breathing 180 per minute.

3:45 p. m. Breathing considerably decreased. Some unsteadiness on legs through lack of normal powers of balance.

4:30 p. m. Appears improved.

August 13, 9:00 a. m. Fowl's legs straddled. Cannot stand up. When disturbed clonic spasms lasting 4 or 5 seconds are set up.

August 14, 9:00 a. m. Fowl paralyzed.

August 15, 9:00 a. m. Fowl stands fairly erect for a short time, but is unsteady on its feet. Diarrhœa present.

August 16. Fowl stands, but is unsteady on feet. Much improved.

August 17, 9:00 a. m. Fowl appears normal.

III.

July 8, 1:55 p. m. Gave 5-pound fowl 2 grains of strychnine in gelatin capsule per os.

2:10 p. m. Fowl unsteady on feet.

2:15 p. m. Sways over backwards. Weak in legs.

4:00 p. m. No other change observed. Fowl apparently normal.

IV.

February 19, 2:10 p. m. Gave fowl 1.5 grains of strychnine sulphate in gelatin capsule per os.

2:30 p. m. Fowl suddenly affected. Delay due to slowness of liquefaction of the capsule. Fowl staggers, legs spread, bird drops on her side. Several severe spasms in first 5 minutes, breathing rapidly.

2:40 p. m. Fowl sleepy, dozes for a moment and then starts suddenly, breathing rapidly; no spasms.

3:00 p. m. Breathing less labored, fowl still prostrated.

4:00 p. m. Bird in sitting position. Can rise slightly from the floor, but cannot stand erect. Breathing normal and fowl appears bright and normal other than the leg weakness.

February 20, 9:00 a. m. Fowl is apparently normal except for incoördination of movement. Unsteady on its feet and lifts them higher than normal in walking.

February 21. Fowl improving in ability to control legs, but still unsteady.

February 23. Fowl apparently normal.

V.

February 8, 10:30 a. m. Gave fowl 8 cc of fluid extract of nux vomica (1% strychnine) with 8 cc of H₂O by tube into crop = 1.2 grains of strychnine.

10:35 a. m. Fowl nervous. Breathing very rapidly.

10:40 a. m. Fowl wabbles, difficult to maintain balance, legs weak, bird does not stand erect. Severe spasm of muscles of body and wings lasting 10 seconds.

10:50 a. m. Fowl in sitting position from leg weakness or partial paralysis, breathing rapidly. Has had three violent convulsions. Comb and wattles redder than normal.

11:00 a. m. Breathing much slower. No more spasms. Bird is recovering.

11:30 a. m. Fowl can stand.

12:00 m. Fowl appears normal.

4:30 p. m. Fowl normal.

VI.

June 25, 10:00 a. m. Gave 5-pound fowl 2 grains of strychnine in gelatin capsule per os. No effect apparent except a slight increase in activity for several moments one hour after administration.

SULPHUR.

Non-toxic dose. $\frac{1}{4}$ ounce +.

EXPERIMENT.

I.

February 20, 9:45 a. m. Fowl received $\frac{1}{4}$ ounce of sulphur. Result: No effect was apparent. Fowl remained as active as it was previous to administration of the sulphur.

TARTAR EMETIC.

Lethal dose. 10 to 15 grains.

Toxic dose. 10 grains.

Non-toxic dose. 5 grains.

EXPERIMENTS.

I.

February 20, 9:40 a. m. Gave fowl 15 grains of tartar emetic.

12:00 m. No special change except that the bird is quieter than normal.

1:00 p. m. Bird quieter than normal. Sits down a good deal.

4:30 p. m. Quiet but shows no special symptoms.

February 21, 9:00 a. m. Fowl died during the night.

Autopsy Notes.—Comb normal. Heart in systole. Crop contains considerable food. Proventriculus shows catarrhal condition. Intestine catarrhal. Duodenum petechiated. Heart petechiated. Liver pale. Kidneys congested.

II.

June 25, 10:00 a. m. Gave fowl 10 grains tartar emetic.

June 26. No apparent change.

June 27. No apparent change.

June 28, 9:00 a. m. Fowl dead.

Autopsy Notes.—Considerable food in crop. Mucosa of dependent portion of crop shows a number of small necrotic patches and erosions. Mucosa of duodenum hemorrhagic. Liver congested in spots, pale in spots. Heart in systole.

III.

February 28, 10:15 a. m. Fowl received 5 grains of tartar emetic. Result: No effect was apparent.

TURPENTINE.

Non-toxic dose. $2\frac{1}{2}$ drams +.

EXPERIMENT.

I.

February 7, 10:30 a. m. Fowl received $2\frac{1}{2}$ drams of turpentine with $2\frac{1}{2}$ drams of linseed oil. Result: No effect was apparent.

THE METHOD OF THE BUREAU OF ANIMAL INDUSTRY FOR TESTING THE PO- TENCY OF TUBERCULIN.

E. C. SCHROEDER, M. D. V., and G. W. BRETT, D. V. M.,
Bureau of Animal Industry Experiment Station.

The frequency with which tuberculous cattle fail to manifest symptoms of disease until long after they have become dangerous disseminators of tubercle bacilli, and the measure in which the control and eradication of tuberculosis among animals depend upon a reliable means of diagnosing the disease, and the extent to which diagnosis depends upon the use of tuberculin, make it eminently desirable that the tuberculin sold under government licenses should be tested periodically to insure its potency and purity.

Recognizing the truth of the above statement, the Experiment Station of the Bureau of Animal Industry undertook a number of years ago to make periodic tests of commercial tuberculin. These tests soon revealed that some of the tuberculin obtainable from regular dealers was greatly lacking in potency, and that the standardization of tuberculin was a problem which presented a number of difficulties.

Experimental work, in which various species of animals were used, was at once undertaken, which led to the adoption of the following described test, now currently used at the Station.

The test is based on the toxicity of tuberculin for tuberculous animals, and is a modification of the standardization test originally defined and used by Koch, the discoverer of the tubercle bacillus and of tuberculin.

Guinea pigs, practically alike in size, age, weight, variety, etc., are infected with tuberculosis through the subcutaneous injection of tuberculous material.

The tuberculous material used is prepared as follows: A small amount of fresh tuberculous tissue from a tuberculous guinea pig (from 2 to 3 grams) is triturated with a sufficient volume of sterile, distilled water to make a smooth, semi-fluid paste. The paste is then thoroughly mixed with 150 to 200 cc of sterile, distilled water and the resulting suspension filtered through ordinary filter paper. The filtrate is used to inject the guinea pigs, and the dose is determined by the approximate abundance of

tubercle bacilli it contains. If, for instance, the microscopic examination of cover-glass preparations of the filtrate shows one tubercle bacillus in each field, one-quarter of a cubic centimeter is regarded as a sufficient dose; if only one or two tubercle bacilli are found on each cover-glass, a dose of one-half cubic centimeter is used.

At the Experiment Station we prefer material of the kind above described for infecting guinea pigs with tuberculosis because it contains a more even distribution of tubercle bacilli than a suspension made with a pure culture. In suspension made with pure cultures it is practically impossible to get rid of clumps of tubercle bacilli, which, though they may be small enough to require magnification to be visible, are found on microscopic examination to be composed of numerous germs. In the diluted tissue emulsion the germs are well separated; only occasionally groups of two or three are seen; hence, any portion of the material is very likely to be practically as infectious as any other equal portion.

Further, as it requires only a very minute amount of a foreign protein to anaphylactically sensitize guinea pigs, the infection of guinea pigs with tuberculous tissue from guinea pigs eliminates the errors which might arise from a sensitization to a foreign protein contained in the culture media on which tubercle bacilli are grown.

Two points in the infection of the guinea pigs are kept in mind: first, the equal exposure of all the guinea pigs, and, second, that the exposure shall be sufficient but not excessive.

Beginning about three weeks after the guinea pigs have been infected, tests are made to determine the degree of sensitiveness to tuberculin which has developed. Two guinea pigs are injected, intraabdominally, one with the equivalent of one cattle dose of tuberculin per 500 grams of its weight and the other with the equivalent of one and one-half cattle doses per 500 grams of its weight. (The term cattle dose signifies the dose of tuberculin recommended for diagnosing tuberculosis in an adult bovine animal of average weight.)

If both guinea pigs survive, several days are allowed to pass and the same test is repeated on two more guinea pigs. If the guinea pig which received the larger dose died and the one which received the smaller dose survived, two guinea pigs are injected daily with the smaller dose until the sensitiveness to tuberculin has developed sufficiently for both to die within a period of

twenty-four hours. Following this day six guinea pigs are given each the equivalent of one cattle dose of tuberculin per 500 grams of weight, and if not less than four of the six die within twenty-four hours the remaining guinea pigs of the number originally infected with tuberculosis are regarded as ready for use on the next day, on which the procedure is as follows:

As many groups of six guinea pigs each, plus one additional group, are taken as there are samples of tuberculin to test, and to each group two normal, healthy guinea pigs are added. Each group is used for one sample of tuberculin and each guinea pig is injected, intraabdominally, with one cattle dose of tuberculin per 500 grams of its weight.

(The dose is carefully measured, as, for example, a guinea pig which weighs just 500 grams receives one cattle dose of tuberculin, or precisely the dose recommended by the manufacturers for testing a bovine animal of average size. Should the guinea pig weigh 600 grams, the dose would be $600/500$ of one cattle dose, or 1.2 cattle doses; should it weigh 400 grams, the dose would be $400/500$ of one cattle dose, or 0.8 cattle dose.)

To determine the sensitiveness of the tuberculous guinea pigs a Bureau of Animal Industry tuberculin is used, which, in a previous test, proved to be of reliable potency.

The plus group of guinea pigs is injected with Bureau of Animal Industry tuberculin of presumably known potency, and is provisionally taken as a standard of comparison.

Now, if the tuberculin which is provisionally taken as the standard kills not less than two-thirds of the sensitized guinea pigs injected with it before the lapse of twenty-four hours, and the two normal guinea pigs injected with it remain free from symptoms of disease excepting the rapidly passing distress which may immediately follow the injection, it is required that any other sample of tuberculin, if it possesses a reliable degree of potency, should kill, within twenty-four hours, at least half the sensitized guinea pigs injected with it, and that the normal guinea pigs injected with it should be alive and well at the end of twenty-four hours.

All guinea pigs that die must show, on autopsy, the characteristic lesions found when tuberculous animals die as the result of an injection of tuberculin.

The normal guinea pigs, after the potency tests are completed, are held under observation a sufficient length of time for tuberculosis to develop in the case the tuberculin with which they were

injected happened to be contaminated with living tubercle bacilli.

If any sample of tuberculin in the tests fails to show sufficient potency, or seems to contain extraneous substances which are harmful to healthy guinea pigs, additional tests are at once made to confirm the original test and to measure the degree of trouble, and it is only after the latter tests are completed that the Experiment Station reports to the Chief of the Bureau of Animal Industry and recommends such action as may be desirable.

As it would not be fair to accept the Bureau of Animal Industry tuberculin or any other test without further consideration, as an absolute standard, although the Bureau tuberculin with numerous and varied tests has never failed to prove satisfactory, it is used provisionally only. It is not recognized as a satisfactory standard until a test in which six to eight other samples of tuberculin are also concerned proves that its potency is neither greater nor lower than the average potency of the six to eight other samples. For example, if it was found that the Bureau tuberculin was the only one among six to eight samples which invariably killed all the sensitized guinea pigs injected with it, it would be necessary at once to assume that it was super-potent. On the other hand, if the average number of deaths caused by the other samples exceeded the proportion of deaths caused by the Bureau tuberculin, the only just conclusion would be that the Bureau product was sub-potent.

It may prove interesting to know that healthy guinea pigs tolerate intraabdominal injections of from two to two and one-half cattle doses of tuberculin per 500 grams of weight. Following inoculations with tuberculosis, the first evidence of developing sensitiveness to tuberculin can be detected, as a rule, on the twelfth day. After the twelfth day the sensitiveness increases with varying rapidity. The interval of time between the first determinable sensitiveness and that degree through which one cattle dose of tuberculin per 500 grams of guinea pig is fatal varies from ten to twenty-three days. In other words, the guinea pigs the Station uses in its tuberculin potency tests may be at the precisely required stage of sensitiveness as early as twenty-two days, or not until as late as thirty-five days, after they have been inoculated with tuberculosis. The average length of time is twenty-nine days.

Sensitiveness continues to increase after one cattle dose of tuberculin per 500 grams weight of guinea pig has become fatal, so that, for example, fifty days after guinea pigs have been

inoculated with tuberculosis one-eighth cattle dose of tuberculin may prove fatal in less than twenty-four hours.

The use of the guinea pigs in practical tests on the day when one cattle dose of tuberculin causes death within twenty-four hours has a double advantage: Tuberculous lesions are sufficiently developed for the easy observation on postmortem examination of the conditions peculiar to such lesions in animals that have died of tuberculin anaphylaxis, and the disease has not progressed to a stage at which it, in combination with the shock due to handling and an intraabdominal injection, may cause frequent deaths not certainly attributable to the toxic properties of tuberculin for tuberculous animals.

There are several companies that invariably produce a tuberculin from 10% to 25% more potent than Bureau tuberculin; also, there are several companies that produce tuberculin which frequently ranges from 25% to 75% below the potency of Bureau tuberculin. The super-potent tuberculin, provided it does not injure healthy guinea pigs injected with it, is the kind that merits special commendation, because, within reasonable or economic limits, it is hardly possible to produce a tuberculin too strong to defeat satisfactory results when it is used as a diagnostic agent for cattle tuberculosis. Cattle that are free from tuberculosis do not react with tuberculin and are not sensibly injured by it, though they receive doses five, or even ten, times as large as the dose required to cause a good reaction in a tuberculous animal. On the other hand, a dose of tuberculin greatly in excess of the necessary amount has no tendency to defeat the occurrence of a reaction in a tuberculous animal.

The slightly greater expenditure required to produce a tuberculin which, if its potency varies at all, does so from normal to super-normal, than to produce a tuberculin which varies from normal to sub-normal, is so small when compared with the losses and disappointments which may follow the use of a tuberculin of sub-normal potency in only a few herds of cattle, that the higher grade should be the constant standard of all manufacturers.

The fire destroying the veterinary hospital and all its contents of Dr. George Cohen on East Twenty-third Street also destroyed all the anatomical equipment of the New York State Veterinary College. Temporary quarters in Twenty-fourth Street at Fiss, Doerr & Carroll's were immediately equipped for the students.

**PRESENTATION OF PORTRAITS OF DRS. SALMON,
MELVIN AND MOHLER TO THE A. V. M. A.
AT THE PHILADELPHIA MEETING.**

Address by R. F. EAGLE, Chicago, Illinois.

*To the Officers and Members of the
American Veterinary Medical Association:*

The index to the dial of veterinary progress continues to point forward. Few, if any, of the sciences have shown the rapid progress that has marked veterinary advancement during the past decade. Time will not permit a review of the many achievements of veterinary science in the interest of hygiene and agriculture, yet suffice it to say that the profession is recognized as truly scientific and indispensable in its economic importance to the general welfare of a progressive citizenship.

The advancement of and recognition now given veterinary science are the result of conscientious effort on the part of either the individual veterinarian or the various veterinary institutions to attain those standards in education and ethics that have been established by this Association. Each veterinarian should at all times feel that his vocation is an honorable one, carrying with it a social standing, the dignity of which will be measured by the attainments of the individual since the profession has already established itself in this connection.

During the development of veterinary science in America not only the profession but its individual members have been greatly dignified by special recognition given numerous members of the profession in view of their valuable scientific and practical contributions to agriculture and hygiene. We find that veterinarians in addition to proving their ability in veterinary lines have also shown exceptional ability in organization, direction and administration. Especially is this true in many avenues of the commercial world. Our profession enlists among its illustrious dead men who, during their lives, possessed exceptional scientific ability and whose personal service given to the further development of veterinary science has caused them to become immortal in the influence that shall live after them. The profession also proudly points to numerous of its members who have survived the illustrious dead as men who are devoting their life's work

to raising the standard of the profession, and many of them have given to the world scientific contributions which have played an important role in the onward march of civilization.

Agriculture and hygiene owe a great deal to such scientific achievements, yet we regret that up to date our profession has not perhaps gone as far as was possible in establishing material tokens in honor of our distinguished members, be they either among the illustrious dead or those that survive them.

It is for the purpose of starting a movement of this kind that I appear before you today, especially since an opportunity has presented itself to honor those that have distinguished themselves in our profession. During the month of December, 1917, I had the privilege of attending a joint session of the United States Live Stock Sanitary Association and officers of the various pure breed associations and the packing industries, which session was called to give consideration to the plan of the United States Bureau of Animal Industry for the establishment of tuberculosis-free accredited herds. The meeting was held in the Saddle and Sirloin Club at the Union Stock Yards, Chicago, Ill., which stock yards, as you know, is the largest live stock market in the world. Among the many beautiful and interesting features and appointments of the Saddle and Sirloin Club is the art gallery, the walls of which are dedicated as a permanent place for the portraits of those whose contributions to the live stock industry entitle them to be thus honored.

While visiting this gallery in company with Dr. V. A. Moore, of Cornell University, Ithaca, N. Y., we were somewhat surprised to note that the veterinary profession had not yet been honored with a portrait of a distinguished member. Dr. Moore and myself at once concluded if the rules of the Saddle and Sirloin Club would permit some plan should be evolved that would result in honoring the memory of Dr. Daniel Elmer Salmon, who not only was distinguished as the first Chief of the United States Bureau of Animal Industry but was also considered a veterinarian of exceptional scientific attainments. Dr. Moore and I appointed ourselves as a committee to investigate the possibilities in this connection and as I am a resident of Chicago it was agreed that I personally follow this matter to a definite conclusion. The possibility of honoring a veterinarian in this manner was first referred to Mr. R. B. Ogilvie, Secretary of the American Clydesdale Association, who is also a member of the Art Committee of the Saddle and Sirloin Club. Mr. Ogilvie was very much im-

pressed with the plan, which, in his opinion, opened a very desirable medium by which the profession would not only be further dignified but, equally important, the establishment of a veterinary gallery in connection with the present gallery of the Saddle and Sirloin Club would result in not only bringing to a common meeting ground the producers of live stock and meats but also those upon whom the country must depend for the conservation of same—namely, the veterinarian. Such a pleasant status should be most desirable and result in a closer coöperative spirit existing between members of our profession and the live stock producers.

Mr. Ogilvie is entitled to not only the appreciation of the entire profession but, further, the greatest commendation for his deep interest and untiring efforts in assisting in the creation of a veterinary gallery in connection with the Saddle and Sirloin Club. Such a gallery will undoubtedly become historic through its influence in developing a more decided fraternal feeling between live stock producers and veterinarians. The interests of the two are in common, and it is essential to the scientific success of both that they better know one another. The creation of this gallery should serve to greatly stimulate the activities among the members of our profession in an effort to gain the same honor and recognition as those whose portraits are now a part of the gallery. Both the profession and the live stock industry will greatly profit by such increased activities.

It might be said for the information of the Association that the Art Gallery of the Saddle and Sirloin Club at Chicago is not only the largest of its kind but the best in the world. Among the membership of the Saddle and Sirloin Club are those directly interested in the breeding and raising of all species of live stock and the production of meats.

Immediately following the receipt of a letter from Mr. A. G. Leonard, Chairman of the Art Committee of the Saddle and Sirloin Club and President of the Union Stock Yards, and also Mr. R. B. Ogilvie, who advised me that the club would favor the acceptance of portraits of distinguished members of the profession, the name of Dr. Daniel Elmer Salmon was submitted. This same committee advised that the portrait of one who for so many years was a faithful and efficient officer of the Department of Agriculture at Washington would be very acceptable. The question then presented itself as to how best obtain the funds for procuring the portrait of Dr. Salmon. In conversation with

Mr. Thomas E. Wilson, President of Wilson & Co., who is also a member of the Saddle and Sirloin Club and a breeder of pure bred cattle, horses and swine, he informed me that in his opinion the plan as outlined for honoring the memory of distinguished members of our profession was one which he personally felt would result in a great amount of good to both the live stock industry and the veterinary profession in America.

Mr. Wilson's high regard for the scientific veterinarian and his further appreciation of his value in connection with the conservation of our live stock and meat industries caused him to take a keen personal interest in the plan for honoring distinguished members of our profession, and when the question of financial assistance was presented to him for the purpose of obtaining a portrait of Dr. Daniel Elmer Salmon, Mr. Wilson immediately volunteered to contribute a fund which he desired to be used as a basis for the establishment of a veterinary gallery in connection with the Saddle and Sirloin Club. A portrait of Dr. Daniel Elmer Salmon, who was Chief of the Bureau of Animal Industry from the time of its establishment in 1884 until 1905, was immediately ordered.

Dr. Salmon was born at Mount Olive, N. J., July 23, 1850. Entering Cornell University in 1868 as a member of its first freshman class, he was graduated in 1872 with the degree of Bachelor of Veterinary Science, having attended a veterinary course in Paris the last six months of his course.

After practicing his profession in New Jersey and North Carolina, Dr. Salmon, in 1883, was called to Washington by Commissioner Loring to establish a veterinary division in the Department of Agriculture. When the Bureau of Animal Industry was created by Congress, Dr. Salmon was appointed Chief of it, a position which he held continuously for twenty years. Among the many important works accomplished during his régime may be mentioned the establishment of the federal meat inspection service, the complete eradication of contagious pleuropneumonia of cattle from the United States, the preservation of the country from imported diseases by perfecting a system of inspecting and quarantining imported animals and the scientific investigation of all animal diseases and their bearing upon public health questions.

Following his service with this government, Dr. Salmon was employed by the government of Uruguay. Later he came back to the United States and was engaged in special veterinary work

in the West. He died at Butte, Mont., on August 30, 1914. Kindly in heart, generous in nature, forbearing in spirit to all men, his life was filled with great achievements for his profession that added to the world's progress and wealth and for which he sought no vain glory.

He was an honorary associate of the Royal College of Veterinary Surgeons of Great Britain, fellow of the American Association for the Advancement of Science, member of the Cornell Alumni Association of Washington, chairman of the committee on animal diseases and animal food of the American Public Health Association, ex-president of the American Veterinary Medical Association, member of the Washington Academy of Science and of various other bodies devoted to medical and general science. His writings on these subjects have been published in many languages.

It is indeed a great honor to present to this Association the portrait in memory of such a distinguished member of the profession as Dr. Daniel Elmer Salmon.

Before the artist had completed the painting of Dr. Salmon's portrait our profession was shocked by the news of the sudden death of Dr. Alonzo Dorus Melvin, second Chief of the United States Bureau of Animal Industry. This news immediately suggested to the committee having in charge the fund contributed by Mr. Wilson that it would meet with the general approval of the profession to suggest the name of Dr. Melvin as the second veterinarian to be honored in this manner.

Dr. Melvin was born at Sterling, Ill., October 28, 1862, and was given the degree of Doctor of Veterinary Surgery by the Chicago Veterinary College in 1886. His service with the Bureau dates back to the year of his graduation, which was almost coincident with the organization of the Bureau in 1884. His first work was in connection with the eradication of pleuro-pneumonia of cattle. In 1890 he was sent to England and stationed at Liverpool to investigate and report upon various phases of the, then, large export trade in live stock from the United States. Upon his return in 1892 he was placed in charge of the federal meat inspection at Chicago. In 1895 he was transferred to Washington and made Chief of the Inspection Division, which at that time included the quarantine work, the eradication of contagious diseases of animals, etc. In 1899 he was made Assistant Chief of the Bureau, and on December 1, 1905, succeeded the late Dr. Salmon as Chief of the Bureau.

During the twelve years of Dr. Melvin's incumbency as Chief the work of the Bureau of Animal Industry has expanded very greatly, and the duties of administration have in consequence become increasingly onerous.

The services of Dr. Melvin that perhaps made him best known to the public were in connection with the last two outbreaks of foot-and-mouth disease in 1908 and 1914, both of which were stamped out under his energetic and effective leadership. His services have also been marked by the eradication of the cattle fever tick from 51 % of a great extent of southern territory quarantined in 1906. In his term of office the present meat inspection law and similar laws looking to the betterment of the live stock industry, all of which were advocated by Dr. Melvin, were enacted by Congress.

In addition to his administrative duties he found time to publish a number of important publications on meat inspection, foot-and-mouth disease, bovine tuberculosis, and the South American meat industry.

Outside of his official position, Dr. Melvin was prominent in veterinary and scientific organizations. Among these may be mentioned the American Veterinary Medical Association, of which he was elected president in 1909. He was an honorary associate of the Royal College of Veterinary Surgeons, London, England, and was a member of the advisory board of the Hygienic Laboratory of the United States Public Health Service.

The offices which he held came to him because of the recognition of his eminent fitness for the duties by virtue of his talents, his wide experience and his devotion to duty. His progress to the highest office in the Bureau was a reward for an unusual accuracy and trustworthiness and a personality as strong and sincere as it was gentle. His long and loyal service was distinguished by his courtesy and fairness in his official dealings and by his uniform kindness and equability in all his personal relations.

The remarkable progress of the Bureau during his administration, its achievements in the development and safeguarding of an industry so vitally important to the welfare of the nation as the live stock industry, the advances made toward a more complete protection of the public health from the menaces of communicable animal diseases and the important results of scientific research carried on under his direction, altogether form an enduring monument to his memory more impressive than

any other to those who can see and understand what has been accomplished through his efforts. The beneficence of his distinguished public service will not cease with his going. Moreover, the example of his unselfish devotion to his work for the good of humanity will continue to serve as an inspiration to those who remain to labor in the same field of endeavor. In a more personal way he will always be affectionately remembered as a large-hearted, patient man, kindly, considerate, appreciative of the work of his subordinates, who not only respected and admired him as their chief but loved him as their friend.

It is, in our opinion, an added honor not only to the profession but to the memory of Dr. Melvin to be able to present to the Association the portrait of this distinguished gentleman.

Immediately following the decision to select the portrait of Dr. Melvin I received a letter over the signatures of Messrs. A. G. Leonard and R. B. Ogilvie in which they stated:

“We do not believe in waiting until our friends pass over the silent river to give an expression of our appreciation of the value of their citizenship and services in whatever field they may have labored. It is commendable to pay just tribute to the memory of the dead, and it is always timely and wise to give some evidences of our appreciation of the value and worth incident to a distinguished citizenship to the living. For this reason we would gladly accept not only the portraits of Dr. Salmon and Dr. Melvin, but also one of Dr. Mohler, whose professional attainments entitle him to be ranked as the most distinguished living member of his profession in the United States. Believing that our action in giving the portraits of the persons named a companionship with our immortals, and their survivors, might unite the members of the veterinary profession in an effort to place their calling on a higher plane than it has hitherto occupied in this country, we will in the future be pleased to receive portraits of any member of your profession whose achievements may entitle him to this distinction.”

In view of this, and the recommendation of Mr. Ogilvie of the American Clydesdale Association, the committee unanimously agreed to show appreciation of Dr. Mohler's contributions to the profession and the live stock industry by selecting his portrait

to be the third to be hung in the gallery and the first portrait of any living veterinarian.

The country is fortunate in having as the successor to such able men as D. E. Salmon and A. D. Melvin at the head of the National Bureau of Animal Industry a man so well qualified for that important post as John Robbins Mohler. In education and experience, in talent and in temperament, in scientific knowledge and its practical application, and in general administrative ability, Dr. Mohler combines in a rare degree the qualities needed in such a position.

His professional education was acquired in the veterinary department of the University of Pennsylvania in his native city of Philadelphia. After a brief period of veterinary practice he entered the service of the Bureau of Animal Industry, where in the course of twenty years he has undergone varied experience and training which have helped to fit him to head the organization. First he was assigned to the live stock inspection service in connection with the quarantine for tick fever of cattle and the importation of animals from Mexico, and was stationed in Texas, New Mexico and California. Later he was transferred to meat inspection and served at Kansas City and Milwaukee. While at the latter place he attended the Medical College of Marquette University for two years. His taste for scientific research led to his transfer to the Pathological Division of the Bureau at Washington. There he rose to be Assistant Chief and later Chief of that Division. After several years he became Assistant Chief of the Bureau under Dr. Melvin. In that position he had a large part in the executive affairs, and during the period of Dr. Melvin's failing health the direction of the Bureau's work devolved upon him to an increasing extent. So when Dr. Melvin passed away the Secretary of Agriculture did the logical thing in appointing Dr. Mohler Chief of the Bureau.

In the science of animal pathology Dr. Mohler has done some notable work which deserves to be recounted here. His first important work of this kind was in clearing up the etiology of a disease of sheep which he named caseous lymphadenitis, an affection which, up to that time, had been confused with tuberculosis and actinomycosis in meat inspection. He discovered a new fusarium as the causal agent of dermal mycosis of horses, and determined that the necrophorus bacillus was the causal factor of such diseases as foot rot in sheep, anovulvitis, necrotic dermatitis, etc. He discovered the microorganism of a new dis-

ease of goats, which disease was named takosis, and also discovered the causal agent of apoplectiform septicemia, a new disease of chickens. He found the infection of surra in an importation of cattle brought to this country from India, and this discovery prevented the introduction of that oriental pest into the United States. He also discovered the trypanosome of dourine in horses in this country, thereby identifying and connecting this animal venereal disease in the United States with the one existing in Europe. He devised an apparatus by which sterile air could be used in the treatment of milk fever of cows. His discovery of the low potency of tetanus antitoxin as found on the market led to the law placing veterinary biological products under the supervision of the Bureau.

In the various outbreaks of foot-and-mouth disease in the United States he has done valuable work. In 1902 he confirmed the diagnosis of the malady. In the 1908 outbreak by a brilliant piece of what may be termed scientific detective work he definitely traced the source of the infection to a strain of contaminated smallpox vaccine that had been imported some time before. At the time of the third outbreak in 1914-15, although engaged in administrative work, he devoted considerable time to making investigations which resulted in the discovery that the virus of foot-and-mouth disease will live for a long time in phenolized hog-cholera serum. One of his most recent achievements is his work on vesicular stomatitis in differentiating this infection from foot-and-mouth disease.

In the practical application of scientific results no less than in original research Dr. Mohler has shown talent and vision. He has labored not so much to make discoveries in pure science as to gain knowledge needed in meeting actual problems and bringing about practical benefits. He was quick to see the possibility and the benefits of utilizing the knowledge of the life history of the southern cattle tick so as to bring about the extermination of this pest, and he was the first member of the staff of the Department of Agriculture to regard such an undertaking as feasible.

As a writer Dr. Mohler is gifted with a clear and fluent style. A long list of literature, some technical and some popular, stands to his credit. Besides original work, he has made English translations of valuable foreign treatises. His popular writings show that he knows how to place useful knowledge before the ordinary stockman and farmer, and that he has no fear of sacrificing scientific dignity in so doing.

Dr. Mohler's activities have not been confined to the Bureau in which he is employed and his popularity with veterinary and other scientific bodies is evidenced by the honorable distinction which has been accorded him by the various organizations in which he holds membership, among which may be mentioned the American Veterinary Medical Association, of which he was vice president in 1912 and president in 1913; United States Live Stock Sanitary Association, which elected him vice president in 1910; District of Columbia Board of Veterinary Examiners, of which he was president, 1914-15; International Veterinary Congress; International Congress of Tuberculosis, secretary of section; vice president of the International Veterinary Congress, 1914; International Congress of Hygiene; Society of American Bacteriologists; Veterinary Medical Association of the District of Columbia; American Public Health Association; Society of Experimental Biology and Medicine; honorary member of the Pennsylvania Veterinary Medical Association; member of the International Commission of the American Veterinary Medical Association on the Control of Bovine Tuberculosis, 1910; member of the Cosmos Club; member of the advisory committee of the Hygiene Laboratory of the Public Health Service; and a member of the veterinary advisory committee of the Surgeon General's Department.

In the world there are many men talented for scientific research; there are many who know how to apply technical knowledge for practical good; there are many who have the gift of organization, direction, and administration; but seldom do we find a man so well endowed with a combination of all these qualities as the one whom we honor today in the presentation of this portrait, John R. Mohler.

It is with considerable pride to the committee that circumstances have made possible the presentation of Dr. Mohler's portrait in his native city and under the shadow of the great university in which he acquired his veterinary education.

Messrs. Leonard and Ogilvie have advised me by a letter that in order to give all due significance to the acceptance of the portraits by the Saddle and Sirloin Club they should come from the American Veterinary Medical Association, of which Drs. Salmon, Melvin and Mohler were distinguished members. It is hoped that the efforts of Messrs. Leonard and Ogilvie, Dr. Moore and myself, which were realized through the generosity of Mr. Thomas E. Wilson, and the attitude of the Saddle and Sirloin Club will

meet with the hearty approval of this Association. We also hope that our efforts will be greatly enlarged upon and that the veterinary gallery of the Saddle and Sirloin Club will often be used to not only show the honor due but appreciation by our profession for those that are entitled to such recognition.

PORTRAITS OF DISTINGUISHED VETERINARIANS PRESENTED TO SADDLE AND SIRLOIN CLUB.

Address by VERANUS A. MOORE, Ithaca, N. Y.

Members of the Saddle and Sirloin Club and Gentlemen:

There are two pleasant duties that I am very glad to perform. The first is to express the appreciation and thanks of veterinarians generally, and of the members of the American Veterinary Medical Association in particular, to the Saddle and Sirloin Club for opening "a gallery for the portraits of distinguished veterinarians." Already in this world-famous collection you have paid a high tribute to men who have built up in America a live stock husbandry and industry unequalled elsewhere in the world. Through the medium of the artist you have expressed a genuine and lasting appreciation of the great leaders in the development of strains of domesticated animals and in the organization of a vast business in animals and their products.

It has been said that great leaders may be regarded as possessing a two-fold ancestry, physical and spiritual. They owe much in one way to their parents, their grandparents and remoter progenitors, from some or all of whom they derive in varying degrees and combinations the personal qualities whose special interaction constitutes their greatness. They owe much in another way to their intellectual and moral ancestors, the thinkers and workers who have preceded them in their own and allied fields of thought and action and who have made possible in the course of time the achievements of the hour.

[Editor's Note.—At the meeting of the American Veterinary Medical Association in Philadelphia in August, 1918, the portraits of Drs. D. E. Salmon, A. D. Melvin and J. R. Mohler were presented to the Association by Dr. R. F. Eagle on behalf of the Art Committee of the Saddle and Sirloin Club, with the understanding that the Association should return the portraits to the club for the gallery it had opened for distinguished veterinarians. In addition to these, the portraits of Dr. James Law, contributed by the alumni of the New York State Veterinary College at Cornell University, and of Dr. Leonard Pearson, contributed by the alumni of the School of Veterinary Medicine of the University of Pennsylvania, were presented to the club and received by its President, Mr. A. H. Sanders.

Likewise, it may be said that every great enterprise, whether religious, educational or industrial in character, is dependent on two factors or groups of factors. The first is found in the initiative, foresight and genius of its founder; the other is the agent or agencies that comes to its relief when the movement has advanced as far as it is possible for it to go by itself. Progress is made by the successive and successful application of new truths. Our marvelous animal husbandry and industry were made possible because certain wise men penetrated the mystery of the laws governing the evolution of strains of animal life and others elucidated the forces that tend to destroy it. The time came, in the development of our animal industry, when live stock owners and dealers welcomed the assistance of the men who had sought out methods to protect dumb creation from the ravages of disease—the pestilence that walketh by night—and together the breeders and veterinarians have advanced the industry to a degree of success far beyond that obtainable by either alone.

In the gallery you are dedicating tonight you are giving expression to an appreciation of the services of those who have safeguarded and protected—sometimes against your will—the animal industry of the nation. To emphasize this point it is not necessary to do more than recall the struggle and victory against contagious pleuro-pneumonia in the eighties; the development of the federal meat inspection, authorized in the nineties; and the eradication of foot-and-mouth disease in the last decade. Associated with these triumphs in control are the invaluable benefits derived from the researches in animal diseases which have made possible the formulation of methods for their prevention.

My second task is to present to the Saddle and Sirloin Club, to adorn the walls of this new gallery, the portraits of five veterinarians, individually distinguished for public service and professionally of lineal descent. These men represent the generations from the beginning of the study of animal plagues in America to the present improved veterinary protection of food-producing animals. They established in the United States a permanent system of veterinary education and crystallized, as it were, efficient methods for state and federal control of animal diseases. It has been my good fortune to have known each of these men; to have worked with each; to have known of their ambitions to protect and serve the live stock interests of our country; and to have been thrilled by the kindling inspiration

of their eventful lives. It is most fitting that their portraits should be the first to be unveiled in this new gallery. Around them, we hope there may be assembled the likenesses of the prominent veterinarians of earlier years who served to the limit of existing knowledge the people of their days; and in the future those who may carry the projects already initiated and to be introduced hereafter to a goal of greater perfection.

The first portrait that I have the honor to present is that of Dr. James Law. He may not be known as widely in this circle as the others, but his portrait is unveiled first because he was the professional teacher of Dr. Salmon, who, because of his official position, was first selected for this honor.

Dr. Law was born in Scotland, February 13, 1838. He was educated in the schools of Edinburgh, Alfort and Lyons and graduated from the Royal College of Veterinary Surgeons. In 1868, he came to America at the solicitation of the late Hon. Andrew D. White to become professor of veterinary medicine in Cornell University. He came from a country where a large human population had made animal husbandry more difficult than here, but he recognized that the experience of the old world would all too soon be ours. Guided by a prophetic vision of that which was sure to come, he undertook immediately to develop the veterinary profession in this country along the lines indicated by scientific discoveries. He was anxious to prepare men to safeguard adequately our animal population. Later, he brought about the establishment of the first state-supported veterinary college in America, over which he presided for twelve years.

In addition to his great work for veterinary education and his valuable scientific contributions, Dr. Law was America's foremost veterinarian to organize sanitary measures to eradicate infectious diseases.

Among his first pupils was Daniel Elmer Salmon, whom he influenced to go to Alfort for further study. It was also under his tutelage that Dr. Leonard Pearson received his early training in live stock sanitation. Dr. Law was an inspiring teacher. He has been a helpful writer and the author of the most comprehensive work on veterinary medicine in America. He is a man of high ideals and a thorough scholar. He is now living on the campus of Cornell University in his eighty-first year, hale and hearty for one of his age. He still retains a deep interest in all veterinary subjects. He is the "grand old man" of the veterinary profession in America and beloved by all who know him.

His portrait will serve both as an inspiration and a benediction to all the generations of veterinarians that are to come and to go.

Dr. Daniel Elmer Salmon was born at Mt. Olive, N. J., July 23, 1850. He graduated with the degree of Bachelor of Science from Cornell University in 1872 and with the degree of Doctor of Veterinary Medicine in 1876. He studied, at Dr. Law's suggestion, a part of the time between '72 and '76 at Alfort, France. While there he came under the influence and teaching of the great Pasteur. He was among the first in America to report the findings of bacteriological studies of animal diseases. In 1879, he was appointed inspector of the state of New York to serve on the staff of Dr. Law in an effort to stamp out contagious pleuropneumonia of cattle. Later he accepted a position under Commissioner LeDuc, of the United States Department of Agriculture, to investigate animal diseases in the Southern States. In 1883, he was recalled to Washington to establish a veterinary division in the Department. About that time, contagious pleuropneumonia became a serious menace, and he recognized the necessity of a central authority and organization to protect our cattle. He conceived the plan of a Federal Bureau of Animal Industry and through his efforts it was established in 1884. As Chief of that Bureau his work was two-fold: research and the enforcement of regulatory laws. It was with feelings of deep regret that he was gradually forced from researches on animal diseases into the turmoils of administrative life. However, it was for him to recognize the greater problems in the sanitary control of food-producing animals and to initiate the means for their solution.

Among the benefits to the live stock interests which the Bureau of Animal Industry gave to our people during his administration should be mentioned the eradication from America of contagious pleuropneumonia in cattle; the federal inspection of exported animals and the ships to carry them; improvement in the quarantine regulations against imported animals; the discovery of the cause of Texas fever and methods for the control of that disease; the establishment of the federal meat inspection service; and many important investigations into the nature of several serious infectious maladies of animals.

As Chief of the Bureau, Dr. Salmon stood firm against political interference with research and other scientific work. He was equally careful to protect the breeders and those engaged in animal traffic. To him, more than to any other, we are in-

debted for an efficient organization to combat animal plagues and a meat inspection service which has protected our commerce in animal products and safeguarded the people against the diseases communicable to them through dumb creation. In these protections our country is not excelled.

In 1906 Dr. Salmon accepted the directorship of the veterinary department of the University of Montevideo for the government of Uruguay. He labored there with great diligence and success for five years, when he returned to this country.

Dr. Salmon was a prominent writer on veterinary subjects, especially those pertaining to the infectious diseases. Many of his publications have appeared in other languages. He was a clear and convincing speaker. He was a member of many scientific societies. With all his greatness he was a modest and kindly man, retiring in nature, of studious habits, just in his deliberations but firm when his decision was reached. A successful pioneer in official live stock sanitation. He died at Butte, Montana, August 30, 1914.

Dr. Alonzo Dorus Melvin, a native of Illinois, was born in Sterling, October 28, 1862. He graduated from the Chicago Veterinary College in 1886 and the same year he entered the service of the Bureau of Animal Industry. He was sent to Liverpool, England, in 1890 to inspect animals and vessels for the United States government. Two years later he was made Chief of the inspection division at Chicago. In 1899 he was appointed assistant chief of the Bureau, which position he held until 1905, when he became its head. To him fell the laborious task and the responsibility of developing the enterprises that had already been initiated. In the twenty-one years during which the Bureau had operated it had undertaken a multiplicity of services for the benefit of the breeders, packers and consumers. To carry such beginnings to a successful conclusion is often more trying than to inaugurate them. With a keen sense of justice and a long-suffering patience, Dr. Melvin advanced the work in hand and met the ever-changing conditions due to new knowledge. Broad and comprehensive as were the purposes of the Bureau, they had to be modified and extended, as well as to be correlated with the work of individual states and institutions. Like his predecessor, Dr. Salmon, he stood firm against the intrusion of political interference with scientific work and bravely met the misguided efforts of live stock owners who from time to time came to believe that science and natural laws could be dis-

regarded in the control of animal plagues. His ability as an administrator, his sterling qualities as a man, his nobility of character, his gentle and sympathetic nature and his loyalty to the purposes of the Bureau endeared him to all. He died suddenly in Washington, D. C., December 7, 1917.

The present Chief of the Bureau of Animal Industry, Dr. John Robbins Mohler, was born in Philadelphia, Pa., May 9, 1875. He graduated from the veterinary department of the University of Pennsylvania in 1896. For a short time he engaged in private practice, but in 1897 he became an inspector in the Bureau of Animal Industry. From 1903 to 1914 he was Chief of the Division of Animal Pathology. From 1914 to 1917 he was assistant chief of the Bureau. Because of the ill health of Dr. Melvin, Dr. Mohler was often called upon to act as the executive. As pathologist, his work is well known to all those interested in animal diseases. He is an honored member of many technical and scientific societies and associations.

The much that could be said of him is epitomized in the fact that his portrait hangs in the gallery of distinguished veterinarians while he himself has not reached the meridian of life or the zenith of his accomplishments for the sciences and industries here represented. Extensive and beneficial as the work of the Bureau has been, I am not reaching beyond the expectations of all who know the present Chief when I predict for it still greater achievements in the future. We all know Dr. Mohler and from our very hearts we wish him success of the highest quality in guiding the destinies of the Bureau. Like his predecessors, he is spending his life in rendering the best possible service in the promotion and protection of the live stock interests of America.

Dr. Leonard Pearson was born in Evansville, Ind., August 17, 1868. He graduated from Cornell University with the degree of Bachelor of Science in 1888 and from the veterinary department of the University of Pennsylvania in 1890. He received the degree of Doctor of Medicine, honorary, from the University of Pennsylvania in 1908.

While at Cornell, Leonard Pearson was a great admirer of his teacher, Dr. Law, who said of him: "He elected veterinary science as his life's work, took and excelled in such work in this line as Cornell then offered and, when he graduated in science in 1888, he joined me in Chicago, seeking a practical acquaintance with the work of the federal government in the extinction

of lung plague in cattle, and he there assisted in a sanitary campaign which for speed and thoroughness has been unparalleled elsewhere."

After graduating from Philadelphia he spent some time in Europe studying veterinary medicine. While in Berlin, he worked in the laboratory of Robert Koch, where he became much interested in tuberculosis. On his return he was made assistant professor of medicine in the veterinary department of the University of Pennsylvania and three years later he was promoted to full professor. In 1897 he was elected Dean of the school.

Dr. Pearson was appointed state veterinarian in 1896 and served continuously in that capacity until his death. It was through his efforts that the Live Stock Sanitary Board of Pennsylvania was organized. He reorganized the veterinary school at the University of Pennsylvania and secured the new buildings and equipment, which are undoubtedly the best in the country. In addition, he procured a farm for experimental work in connection with animal diseases.

Dr. Pearson was a recognized leader in the control of infectious diseases. He was the first in America to use tuberculin for the diagnosis of tuberculosis in cattle. His investigations on bovine tuberculosis were extensive and most valuable. So eminent had he become in state veterinary work that in 1895 Secretary Wilson offered him the position of Chief of the Bureau of Animal Industry. His interest in veterinary education and his loyalty to Pennsylvania led him to decline the offer. He was a prominent writer on veterinary subjects. For years he conducted the veterinary magazine through which he gave to his profession much of the best in the languages of other countries, as well as many valuable contributions of his own.

The reorganization of the veterinary school and the Pennsylvania State Live Stock Sanitary Board are the results of his efforts that stand out in bold relief above much else of great value that he did. While these will be known to the historian, the sterling qualities of the man will abide with those who knew him. He was a manly man with a sweetness of disposition rarely found among men. He may be characterized as a man of kindness, courage and truth. His deep interest in the advancement and betterment of his profession caused him "to burn the candle of life at both ends." As a result, he died a premature death at Spruce Brook, Newfoundland, September 20, 1909.

The portraits of Drs. Law and Pearson are contributed by the alumni of the colleges they presided over; those of the chiefs of the Bureau are presented by the American Veterinary Medical Association. Each of these men has served this Association as its President.

We cannot at this time measure the value to humanity of the work and influence of these truly great and good men. They will stimulate others to greater effort for all time because they possessed the master words of success—character and work. Their labors have extended over a period of fifty years, the most prodigious period of change the world has ever known. We of the veterinary profession are most grateful not alone that these unquestioned leaders have been thus honored but also that the fundamental truths and principles for which they contended in the prevention and control of infectious diseases have been accepted. The general recognition of these unequivocal conditions for success in sanitary work affects beneficially every individual in our land. It is a good omen for the future that the first half-century of live stock sanitation in America has brought such far-reaching and munificent results. The fifty years since this work began are,

*"As fifty folios bound and set
By time, the great transcriber on his shelves,"*

wherein are written our knowledge of animal diseases, the progress in American veterinary education and the history of our animal industry.

LEGALIZED EXPOSING OF MAN TO TUBERCULOSIS.*

J. F. WINCHESTER, Lawrence, Mass.

Deception is transient, and the day of reckoning is, or soon will be, here for the trafficker in tuberculous animals, and every one that is aware of the presence of tuberculosis among his cattle and swine is deceiving himself when he thinks it is unknown to others.

Tuberculosis in domestic animals prevails over the entire globe, but the centers of this malady are met with in the centers of human population, and in those centers a large percentage of tuberculosis is found in mankind.

*Address before the Essex County Associated Boards of Trade.

There is substantial evidence to indicate that the percentage of tuberculous cattle and swine in some states is very large. Federal inspection for the year ending June 30, 1917, records that 40,000,000 swine were slaughtered, and of that number 3,974,000 were found to be affected with tuberculosis. During the year 1917, 203,193 cattle were found, on postmortem examination, to be affected with tuberculosis.

Since man derives a great deal, and in some instances, his entire sustenance from the flesh and milk from tuberculous animals, we cannot doubt the identity between him and them of the disease.

It has been demonstrated that the bovine type of Koch's bacillus does appear in the human subject, and I venture the opinion that Koch's bacillus of the bovine type is the principal factor in the primary cause of human tuberculosis. The tubercle germ or Koch's bacillus of the bovine type as found in the lesions of cattle is described "shorter, thicker, fatter and stubbier than the longer, leaner, lanker attenuated germs found in the lesions of hogs and men" known as the human type of Koch's bacillus. That the bovine type of Koch's bacillus does appear in the human subject, causing death and disability, has been demonstrated by various investigators.

It has repeatedly been shown that it is possible to so alter the human type of the tubercle bacillus, by systematic passage through animals, that, with the present means at our disposal, they cannot be distinguished from bacilli of the bovine type.

Tuberculosis is an economic problem affecting not only the live stock owner but the nation and, being preventable, it should be eradicated.

Tuberculosis is tolerated because we are so closely associated with the disease that our familiarity with it breeds for it contempt.

Whenever and wherever an effort has been made to eradicate tuberculosis in cattle, and whenever earnest coöperation has been obtained, success has always followed.

In this state it is lawful to traffic in known tuberculous milch cows, as shown in P. D. No. 98, January, 1918, which records 128 reactors without record of their disposition. Delegates from the Lawrence Anti-Tuberculosis League and the Lawrence Board of Health appeared before the Committee on Agriculture, calling their attention to this fact two consecutive years, 1916 and 1917.

The Legislature of 1918 amended Section 25 of Chapter 90 of the Revised Laws, as amended by Chapter 608 of the Acts of the year 1912, by inserting after the word "disease" in the fifth line thereof, the words "Whenever an animal has been released from quarantine by order of the Commissioner, the same animal shall not be again quarantined or isolated by an inspector of animals during a period of thirty days immediately following said release, except upon order of the Commissioner." Signed by the Governor, March 1, 1918.

Here is the chance to revive the fundamental scientific principle established in 1555, by Vieusens, viz: "Appeal to facts rather than to authority."

In this state the federal government is supreme when dealing with contagious diseases in animals.

The federal government has under way a campaign for eradicating tuberculosis, planned under three separate projects:

1. Eradication from pure bred herds of cattle.
2. Eradication of tuberculosis from swine.
3. Eradication from circumscribed areas.

"Pure bred herds which have been tuberculin tested and found to be free from tuberculosis will be classed as accredited herds; that is, herds which the state or federal authorities may certify as being free from the disease." "The known healthy animal will be in great demand and will have entree into any community." This movement is purely a voluntary one, no law required, and its success will depend upon the judgment and decision of live stock owners. It is a practical proposition, in that it is a plan of fair dealing, but without coöperation little can be accomplished.

Mr. H. R. Smith, live stock commissioner of Chicago, has figured, from the statistics of the U. S. Department of Agriculture, what the losses were from tuberculosis in cattle and hogs for the year 1916 at the seven western markets. It shows that fifty train loads of cattle and hogs of forty cars each were tanked because of tuberculosis.

Tuberculosis of swine exists to an alarming degree, due to the fact that dairy by-products, garbage, and the undigested grain and feces from tuberculous cattle are fed to hogs.

The State Board of Health by its district health officer called the attention of the Board of Health of Lawrence, July 31, 1918, to the fact that uninspected carcasses of neat cattle were served to the inmates of the Essex County Training School.

Section 105, Revised Laws, Chapter 75, as amended by General Statutes, 1916, Chapter 139, says in part: "Who, upon his own premises, and not in a slaughter house, slaughters his own neat cattle, sheep or swine, but the carcass of any such animals, intended for sale, shall be inspected, and, unless condemned, shall be stamped or branded, etc."

Complying with notice from the State Board of Health, Mr. D. J. Murphy, Chairman of the Lawrence Board of Health, accompanied me August 1 to the school. We were informed by the Superintendent that the tuberculin test had been applied to the bovines and some of the cattle were considered to be suspicious of tuberculosis.

We were shown the carcass of a cow (a suspect) that had been slaughtered July 31. Said carcass had a diseased skeletal lymph gland; a liver was shown us, said to have been removed from that animal that was diseased. Said carcass was seized and tanked.

Mr. Herman C. Lythgoe, Director of Food and Drugs for the State Board of Health, was advised of these facts August 13, 1918. Under date of September 10, 1918, Mr. Lythgoe writes "A copy of your letter of August 13, to me, has just been submitted to me by the Commissioner of Health.

"If you propose to carry this matter to the courts I would appreciate an opportunity to obtain the results of the trial."

In view of this opinion addressed to the inspector of slaughtering of Lawrence, the Lawrence Board of Health instructed its clerk to communicate with Dr. Eugene R. Kelley, the Commissioner of Health, for his opinion, which in part is as follows: "The legality of which can only be decided by the Attorney General of the Commonwealth" and is as follows:

Boston, October 17, 1918.

Eugene R. Kelley, M. D.,

Commissioner of Health.

Dear Sir:

I acknowledge receipt of your letter of September 20, 1918, requesting opinion on the following questions:

1. Is it lawful or proper for slaughtering to be done at the county training school without inspection by an inspector?
2. Is it lawful to have the meat of such carcass served to the inmates of said institution?

Assuming, therefore, that the slaughtering of neat cattle, sheep or swine belonging to the county is done by the county training school on the premises of the county training school,

and the meat is not intended for sale, I am of the opinion that your first question is to be answered in the affirmative.

It is manifest that such meat, when served to the inmates of the institution is not, within the meaning of the statute, "being offered for sale," and accordingly your second inquiry is to be answered in the affirmative.

Very truly yours,

HENRY C. ATTWILL,
Attorney General.

With the loss of 101,396 human beings from tuberculosis in the United States in 1916, is it desirable or advisable that the words "intended for sale" which were added to Section 105, Chapter 75, in the year 1916 be allowed to remain?

Public Health Bulletin of the State Department of Health, Vol. 5, No. 6, June 1918, pages 158 to 165, inclusive, give rules and regulations and recommendations pertaining to the business of slaughtering and meat inspection, but I fail to find the words "intended for sale."

The percent of tuberculosis in garbage-fed hogs is recorded as high as 40% when non-sterilized garbage is fed. There is a record of 2,199 hogs slaughtered that had been fed sterilized garbage and not a case of tuberculosis. This commonwealth for the past four years has subsidized the hog industry to such a degree that it has become an admitted monopoly.

This commonwealth has commercialized this monopoly to such an extent that the anti hog cholera serum and virus used was the product of one firm—out of the state—and the agents of the Massachusetts Department of Animal Industry have collected from an owner of hogs treated the price of the anti hog cholera serum and virus used. It is a fact and admitted by the Commissioner that the cause of this disease is carried in garbage. *Should the garbage be sterilized*, the State's monopoly and commercial interests would cease.

The cost to the state for this work does not appear separately in the report of the Commissioner of Animal Industry. The minimum cost to the farmer is about fifty cents per hog, and the records show in four years, 109,281 hogs treated.

Dr. Burton R. Rogers in an address before the National Tuberculosis Association calls attention to the fact that childhood is now almost universally accepted as the age when primary tuberculosis infection occurs; even though symptoms may not

appear or death occur until twenty-five or more years have passed. "The two paramount conditions of childhood are close association with the parent and the milk-drinking period. In spite of the prevailing opinion, final analysis may some day prove milk-borne infection of bovine origin as the principal factor in the primary cause of human tuberculosis."

Is tuberculosis really a city disease? Dr. Rogers has made a study of Crawford County, Indiana. It has 304 square miles, less than 12,000 inhabitants, 1,861 farms in 21 towns and villages. The largest town has less than 1,200 people. In a six-year period 24% of the deaths were due to tuberculosis. The Secretary of the State Board of Health of Indiana wrote Dr. Rogers that in the last ten years 2,000 people in this county of less than 13,000 died of tuberculosis.

"In order to explain this high human mortality, investigation should not be confined to the human living conditions, but the condition of the cows and herds of the county must be positively known; what they will, are and have been doing to the hogs.

"It is recorded that during the last week of March, 1918, at Fort Riley, of the 83 boys rejected for tuberculosis, 42 of them came off sunkist farms of Kansas and Oklahoma."

In complying with the request of your Chairman of the Agricultural Committee, I most respectfully submit the following suggestions:

That the amendment I have referred to be repealed.

That the attention of the Committee on Legislation be called to the law that permits traffic in *known* tubercular milch cows.

That the attention of the Governor and Council be called to this situation, that they may correct the monopoly and the commercializing by the Department of Animal Industry in dealing with a garbage-caused contagious disease.

That Section 105, Revised Laws, Chapter 75, as amended by General Statutes, 1916, Chapter 139, be again amended by striking out the words "intended for sale."

Drs. R. W. McCully and Winters were the veterinarians at the National Horse Show in November at Madison Square Garden.

The S. A. T. Corps at the New York Veterinary College at New York University will be demobilized in December.

CLINICAL AND CASE REPORTS.

PARTURIENT PARESIS (MILK FEVER IN COWS).

DANIEL J. HEALY,
Kentucky Agricultural Experiment Station.

During the present war emergency veterinary surgeons are having great difficulty in obtaining the cylinders of oxygen used in the treatment of parturient paresis. In many localities it is impossible to obtain such cylinders, or have the old cylinders refilled.

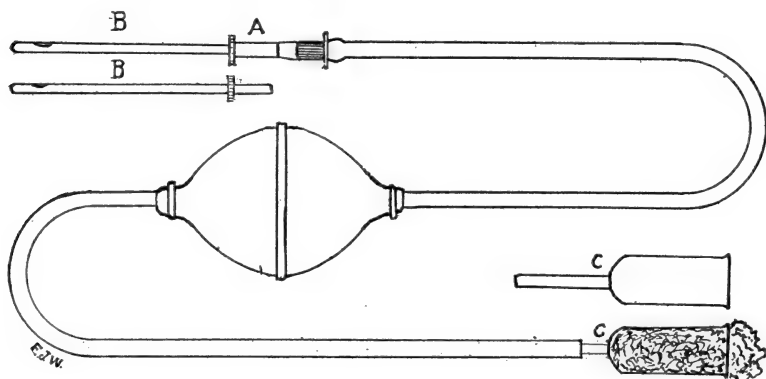
Under these circumstances it is well to recall that fourteen years ago the most popular and successful treatment for parturient paresis was distention of the udder with plain filtered air. That air was later supplanted by oxygen was due to the diminished danger of infection, and the more thorough distention of the udder obtained with oxygen. With proper care, filtered air can be used with as little danger of infection and with as thorough distention of the udder as can oxygen.

The successful treatment of parturient paresis depends upon complete and thorough distention of the udder and not upon the curative value of the substance used to procure such distention. J. Schmidt of Kolding, Denmark, who originated this method of treatment, used a solution of potassium iodid and recognized the value of allowing air to enter the udder with the solution. It was quickly demonstrated by others that carbolic acid solution, creolin solution, lysol solution, sterile salt solution, sterile water, and etherized air could be used successfully.

Andersen of Skanderborg, Denmark, demonstrated that thorough distention of the udder with plain filtered air was sufficient. This method is the most simple, practical and harmless, requiring the simple and inexpensive apparatus illustrated below, or some modification of it.

The cut represents an ordinary bulb syringe of good quality. Inserted into the tubing at "A" is a medium-sized milking tube "B." Inserted into the tubing at "C" is a glass carbon-filter tube "C," diameter at top 20 mm, containing a plug of sterile absorbent cotton through which air entering the syringe must

pass. The milking tube should be sterilized by boiling in water for fifteen minutes and afterward handled in a manner which prevents contamination. The udder and teats of the cow and also the hands of the operator should be cleansed with soap and water, and then carefully disinfected with 5% carbolic acid solution, or some equally good antiseptic. A clean towel should be placed under the udder and teats. The sterile milking tube, previously attached to the syringe, is now inserted into a teat and the quarter thoroughly inflated. Kneading and rubbing the



udder aid thorough inflation. The milking tube is now withdrawn and the teat securely tied with a tape. The remaining quarters are inflated in a similar manner, the milking tube being rinsed in antiseptic solution before introducing into each teat. Should the air be absorbed and no improvement be noted after five hours, the treatment should be repeated, using the same precautions against infection.

The air may be left in the udder for twenty-four hours and then gradually milked out. If the cow is constipated a moderate dose of Epsom salts, one to one and a half pounds, should be given, to which should be added one-half ounce ground ginger and one drachm powdered nux vomica.

For several days an easily digested and laxative diet in restricted quantities should be given, together with a liberal supply of pure water.

Lieutenant John MacTammany, one of New York's city department veterinarians, has returned from France, where he spent more than a year with the A. E. F. at Toul and Verdun.

MONSTROSITIES.

W. J. CROCKER,
Laboratories of Veterinary Pathology,
University of Pennsylvania.

CEPHALOTHORACOOMPHALOPAGUS.

(Fig)

This monstrosity, as shown in Figure 1, simulates a dipygus in which the posterior part of the trunk is double, but examination of Figure 2 shows fusion at the head, thorax and umbilicus.

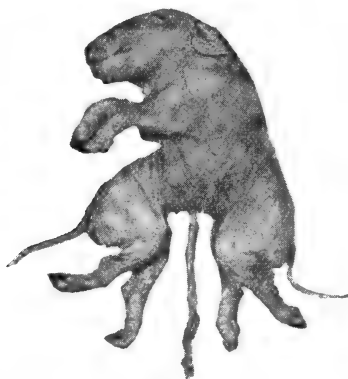


Figure 1.

The head presents but two ears. A common neck contains two separate columns of cervical bones. Fusion of the thoraces occurs at the sternum and is continuous to the navel. There are



Figure 2.

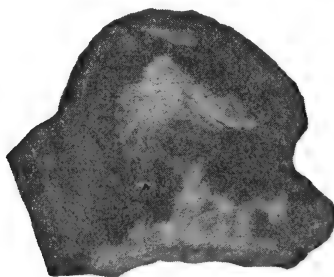
four front legs, four hind legs, two tails and one umbilical cord.

The suffix pagus (G. pagos) means that which has become solid; thus fusion at the head, thorax and umbilicus is expressed by the term cephalothoracoomalopagus.

CONGENITAL INTERNAL HYDROCEPHALUS.

(Calf)

The cranium is greatly enlarged. The brain thin walled and the ventricles distended by watery fluid. It is probably due to



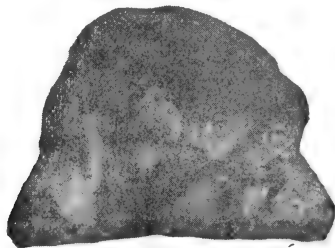
Hydrocephalus.

damming of the cerebrospinal fluid through pressure on the medullary canal in consequence of adhesion of the head fold of the embryo to the amnion.

DIPROSOPUS.

(Calf)

Double monstrosities are derived from a single ovum, as in the case of identical twins, and may vary in degree of completeness of each individual. Diprosopus indicates a double face, in



Diprosopus.

which the cranium is single and the nose and jaw parts double. The remainder of the specimen was that of a single individual. It differs from dicephalus in that the latter presents two separate craniums and often two separate necks.

ABSTRACTS.

CONTAGIOUS ABORTION OF CATTLE.

Circular No. 69, Department of Veterinary Medicine, Kansas Agricultural Experiment Station, discusses contagious abortion of cattle from the standpoint of its nature, cause, symptoms, complications, methods of spread, control and treatment, and, in summary, the authors conclude as follows:

1. Abortion disease is one of the most destructive of all cattle diseases and should receive most careful attention from both beef cattlemen and dairymen.

2. This is a contagious disease; therefore, due to a specific germ rather than accident.

3. It not only causes the death and expulsion of the immature calf, but manifests itself by retained afterbirth and sterility as well.

4. It is spread throughout the herd by the bull and by contamination of feed, and from herd to herd by the purchase of diseased cattle.

5. There is no cure for the disease. Drugs, such as carbolic acid and methylene blue, have proved valueless, while vaccines are still in the experimental stage.

6. Abortion disease can be controlled by proper methods of herd management, being dependent upon three fundamental principles, viz: (1) preventing the spread of infection; (2) developing herd immunity; and (3) treating affected animals to promote recovery and preserve the reproductive functions.

7. Treatment of aborted cows and of retained afterbirth and sterility requires special knowledge and skill; therefore, a graduate veterinarian should be employed if possible.

8. Abortion disease is self-limiting, and will die down of itself if the breeding herd is kept intact.

9. Never sacrifice valuable breeding animals because of this disease; retain and treat the aborters, and raise the normal calves to replenish the herd.

10. Results in combating abortion disease depend upon the establishment of definite plans of herd improvement, and careful attention to the details of sanitation and preventive medicine.

In a concluding statement, the authors remark that, while much remains to be discovered concerning abortion disease, and many points are still in controversy, *enough is known to make its control possible.* (The italics are the editor's.)

TUBERCULOSIS IN THE CAMEL.

The author places on record what is believed to be the first authentic case of congenital tuberculosis in the camel. The lesions were found in the liver of an aborted foetus, which contained numerous nodules from the size of a pea to a haricot bean, and its lymph glands were enlarged to the size of a walnut, and caseous. Scrapings from the liver nodules and the hepatic lymph glands revealed acid-fast bacilli with all of the characters of typical tubercle bacilli.

The mother of the foetus was tested with ordinary tuberculin (4 cc subcutaneously) and a distinct temperature reaction was obtained. The animal was then slaughtered and advanced lesions of tuberculosis were found in the visceral organs.

In former articles the author has drawn attention to the small number of cases of tuberculosis recorded in camels outside of Egypt. So far as ascertainable, these do not appear to exceed four in number. The author now places on record an old-standing case of pulmonary tuberculosis in an Algerian camel recently imported into Egypt, and the nature of the lesions indicated that this animal had undoubtedly become infected prior to the date of arrival.—Mason (F. E.), *Jl. Comp. Path. & Therap.*, 1918, June, Vol. 31, No. 2, pp. 100-102.

ANTHRAX DANGERS.

Among the most important recommendations of the Departmental Committee (British) which has been inquiring into precautions for preventing infection from anthrax in the manipulation of wool, goat hair, and camel hair, is the abandonment of the attempt to control anthrax by means of regulation as totally inadequate to cope with the danger. The Committee arrive at the conclusion that the simplest, cheapest, and most effective method of preventing anthrax in the various branches of the wool trade is by disinfection of wool and hair abroad, a course which

possesses the further advantage of destroying anthrax spores at the earliest stage possible. It is recommended that the British government should establish the disinfection authority, and should then take steps to obtain the coöperation of the governments of all organized countries (1) in securing the disinfection of wool and hair and (2) in such other measures as the disinfection authority may advise for the general prevention of anthrax. Arrangements should be made with the governments of British territory abroad whereby the export of materials decided by the disinfection authority to be dangerous is prohibited, except after disinfection in a controlled disinfecting station and unless accompanied by a disinfection certificate. Where possible similar arrangements should be made with the government of such other countries as may appear desirable.—Glasgow (Scotland) Herald.

[*Note*.—The above seems to verify the editorial statement in the December Journal as to the difficulty in controlling anthrax infection.]

CURIOUS CASE OF CHOKING IN A MULE.

The unusual case recorded began as one of colic. After the animal had been walked about for some minutes a discharge of bubbly, stringy, glairy mucus, mixed with pieces of straw, escaped from the nostril. The discharge persisted until the time of death. Palpation over the pharynx caused a certain amount of pain, but pressure over the larynx induced no cough.

The same symptoms were observed the next morning. Food was chewed with difficulty and then rejected. Salivation was profuse.

Water was returned by the mouth and nose, mixed with pieces of straw and peas in a paste. In the evening respiration was accelerated, the nostrils dilated, and the temperature elevated. The region of the pharynx was very sensitive, the thyroid swollen, and slight pressure over the muscles in the lower part of the neck caused their contraction. And as much of the œsophagus as could be palpated was hard to the touch.

On postmortem examination the mucous-membrane of the larynx and trachea was congested, purple in the cervical part, and dark green at the entrance to the chest. The mucous-membrane of the pharynx was also congested with some erosions,

and the mucus which covered it contained more blood than that which was present in the trachea.

Some pieces of straw were embedded in the mucous-membrane at the base of the epiglottis. The œsophagus presented the most interesting feature. It was filled with a tight dry mass of food as far as a point some 12 to 15 cm from the diaphragm, where the tube presented a certain degree of contraction. The mucous-membrane was swollen and congested, and of a reddish-brown color.

There was hypostatic congestion of the right lung, and the left lung was the seat of several foci of gangrene, doubtless produced by foreign bodies. The other organs were normal.—H. Lambert, *Rec. Med. Vet.*, Vol. XCIV, No. 12, 30th June, 1918. *Bull. Soc. Centr. Med. Vet.*, 20th June, 1918, pp. 287-289. *Bull. Soc. Med. Vet. Pratique*, Vol. 11, No. 7, July, 1918, pp. 197-199.

STRANGLES: INTRAPALPEBRAL REACTION.

The author seems to have reasons for thinking that a test for strangles (colt distemper), similar to those for tuberculosis and glanders, would serve a useful purpose, and gives a description of such a test with a reagent which he terms *streptococcin*.

The preparation of the reagent is comparatively simple, but it is necessary to first obtain a *Streptococcus equi* of standard virulence. A flask containing about 1 litre of bouillon is inoculated with *Streptococcus equi* of which the virulence is known. After six to seven days' incubation the culture is subjected to a temperature of 100°C. for a quarter of an hour. Next day it is filtered and again subjected to the same temperature for the same length of time. It is then placed in small vessels, which are afterward sealed with the flame. If protected from the light, the preparation may be kept for six months. The amount to be injected is 1 cc, and the lower eyelid is preferably chosen.

In a negative reaction, the palpebral swelling and œdema is considerable and transitory, and there is absence of conjunctival and lachrymo-nasal exudation. After a period of twenty-four hours, the œdema has usually disappeared.

With a positive reaction, the local œdema usually occurs early, and with a little experience it is possible, sometimes, to state that the reaction is taking place as early as the third, or even the

second, hour. The swelling increases for 12 to 24 hours, extends slightly into the upper eyelid, and diffuses downward into the masseteric region; it is acutely sensitive, and the lymphatics are engorged and painful. The persistence of the swelling depends upon the individual case, but remains until the seventy-second hour or longer.

In brief, the reaction is similar to that of a typical mallein reaction; but it should be noted that it is accompanied by an abundant discharge, which is at first serous and afterward mucopurulent.

In the case of febrile and sub-febrile subjects, the elevation of temperature is said to be considerable.—Cinotti (F.), *Il Nuovo Ercolani*, Vol. XXIII, No. 12, June 30, 1918, pp. 145-156; figures, 4.

Dr. John F. De Vine of Goshen, N. Y., who enjoys one of the largest cattle practices in the East, addressed the Veterinary Medical Society in New York City in December on "Types of Dairy Breeds of Cattle."

Dr. Robert S. MacKellar, retiring Secretary of the City Veterinary Medical Association, filled this office for eight years and was absent but from two meetings in that period. He declined a reelection.

Drs. R. H. Davis, B. N. Pennell and George W. Heath of Connecticut were visitors to Gotham in November. They all enjoy splendid practices in the "Nutmeg State."

Dr. L. N. Jargo, supervising inspector of the Baton Rouge, La., tick eradication force, has been transferred to stock yards work in Chicago, Ill.

New York City has at least five different humane organizations looking after the welfare of animals in the big city. The American Humane Society, the original Bergh, the Horse Aid Society given to education and cooperative helpfulness. The Woman's Animal Relief with their spacious hospital. A third society that prosecutes very vigorously all those who offend in any way. "The Bide a Wee Home" that rescues the smaller animals and sends many to a country branch home.

Dr. H. N. Guilfoyle, who has been on military leave, reported for duty at Baton Rouge, La., on the 10th instant, being assigned to his former tick eradication duties.

Dr. Sigurd Olson has been transferred from tick eradication work in Louisiana to the force of Dr. R. W. Tuck, New Orleans, Louisiana.

ARMY VETERINARY SERVICE.

The Journal has been requested to announce that army veterinary officers who have contributions which they desire to have published in the Journal should first submit them to the office of the Surgeon-General. This is merely to prevent the possibility of our friends in the Veterinary Corps getting into trouble with the military authorities.

Members of the Association will recall that 1,017 new members were elected at the Philadelphia meeting last summer. Quite a large number of these came from Camp Greenleaf, and it is but just that those who were instrumental in getting this large number should receive the proper credit for it. Captain Otis A. Longley is one of the moving spirits in this work. He was assisted by Major Stokes, Senior Instructor at Camp Greenleaf. They were also assisted by Dr. Ranek, of Mississippi, who stopped at Camp Greenleaf on his way to Philadelphia. Others who helped in the good work are Captain Thomas Hickman, formerly of Kansas City, and Lieutenant George Donnelly of California. Lieutenant M. C. Hall was also a good worker. This active bunch of boosters for the A. V. M. A. are still hitting the trail and the secretary recently received a telegraphic request for 500 application blanks to be sent to Captain Longley, and we rather think that most of them will be used. So far as the A. V. M. A. army work is concerned, we are going to award the "distinguished service medal" to this bunch, headed by Captain Longley, unless someone else can beat them.

N. S. M.

THE VETERINARY SERVICE, AMERICAN EXPEDITIONARY FORCES, FROM APRIL 7, 1917, TO SEPTEMBER, 1918.

The Veterinary Service of the American Expeditionary Forces from April 7, 1917, the date we declared war, up to November, 1917, was practically non-existent. We had few animals in the early part, as we were buying them from the French; our tonnage was being used for troops and supplies; divisions as they

arrived were sent to the training areas, they not requiring animals immediately. Twenty-four veterinarians of the first contingent were sent to French veterinary hospitals for instruction.

In November, 1917, the Veterinary Service was transferred by General Order No. 39, American Expeditionary Force, to the Remount Service and placed under the Chief of that service for administration. Major William P. Hill, who had been in France as a military observer with both the French and British veterinary services since January 29, 1916, was appointed Veterinary Advisor to the Chief of the Remount Service. Up to this time there had been no Veterinary Service mentioned in General Orders. March 24, 1918, Major Hill was appointed Chief Veterinarian, American Expeditionary Forces, but the Veterinary Service was still left in the Remount Service.

Majors Klein and Mason had been sent over by the Surgeon General in November to present Special Regulations No. 70 (which are the regulations now in force) in order that they might hitch up with the system in the United States. These were considered unworkable and temporarily disapproved. Majors Klein and Mason some three months later left for Washington with matters standing the same as when they came.

In August, Colonel J. Aitken of the British Veterinary Service, who had been of great service to us in Washington, arrived at Tours, the Headquarters of the Service of Supplies. He had been requested by the Commander-in-Chief to come to Tours and give his advice and help to the Veterinary Service, American Expeditionary Forces.

In September the Veterinary Service was taken out of the Remount Service and reinstated in the Medical Department under the Chief Surgeon, and Special Regulations No. 70 went into effect for the American Expeditionary Forces.

This step immediately gave the Veterinary Service administration in the combat divisions and zone of advance on all technical matters and thereby threw the responsibility of the proper administration on the Chief Veterinarian, which was the thing we had been struggling to obtain.

Colonel D. S. White was ordered from Washington and was appointed Chief Veterinarian, American Expeditionary Forces, and Major Hill, then present Chief, was ordered to Washington as an instructor; his vast experience with the two large armies in the field from January, 1916, to 1918 being considered to be of

great value to the many schools training men for service overseas in the Veterinary Service. The signing of the armistice has thrown his usefulness over here, temporarily, on the side.

Major Hill is now Camp Veterinarian, Camp Zachary Taylor, Kentucky.

There's a Major in the Army that's a Vet. as well as poet
And when it comes to horses he's an artist, and all know it.
With his campaign hat a-tilted and a twinkle in his eye
You'd know he came from Ireland 'ere the brogue began to fly.
Now, the Major is an artist in several different trades
And at slinging of the language he can give them cards and
spades.

When it comes to fancy cussing, let me tell you, oh! my son,
If they put it o'er the Major they are surely going some.
One sunny day in autumn while the Major rode along
A rookie at attention was humming of a song.
The Major stopped, one look he gave, but not a second shy,
He turned the torrents of his wrath upon that one poor guy.
For thirteen minutes by the watch the English language flew—
Dark sulphur fumes were eddying, the air was thick and blue.
The Major stopped an instant, for breath he was at loss,
The rookie blandly smiled and said, "Me no spik Englis, Boss."

* * * * *

The Major smiled a sickly grin and quickly rode away.
His horse still snorts so often he can scarcely eat his hay.
Now when the poor Lieutenants see the Major's wrath astir
They snappily salute and say, "I no spik English, Sir."

N. S. M.

It is rumored that the veterinary dentists of the Empire State will seek helpful legislation at Albany. The Knight bill has placed all veterinary dentists under the ban as violators of the veterinary practice law.

The election of officers at the County Veterinary Medical Society in December resulted in the election of Dr. David W. Cochran as President and Dr. J. E. Crawford of Far Rockaway as Secretary-Treasurer.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

SECRETARY'S OFFICE.

The committee appointed by President Moore, composed of Drs. L. E. Day, Geo. Frost, H. R. Ryder, A. C. Worms and D. Joffrey, to canvass the vote for members of the Executive Board of the A. V. M. A. for Districts No. 2 and No. 3, met on November 20 at the Secretary's office. Those present were Drs. Day, Ryder and Frost. The committee organized by electing Dr. L. E. Day as chairman, N. S. Mayo acting as secretary.

Before counting the votes the following action was taken, moved and carried that unsigned ballots and those signed by typewriter or stencil be not counted.

The following is the result of the ballot:

District No. 2—Total number of votes cast, 384; T. E. Munce 190, W. Horace Hoskins 127, L. H. Howard 32, Lieutenant Colonel C. J. Marshall 22, Cassius Way 13.

District No. 3—Total number of votes cast, 316; S. H. Bennett 101, A. H. Baker 93, D. M. Campbell 56, S. Brenton 51, A. McKercher 15.

Secretary Mayo reported that he had received requests from members for a number of nominating votes to be sent to a single member. This was refused and only one nominating vote was sent to each member. It was moved and carried that the action of the Secretary in sending only one nominating ballot to each member in their respective districts be approved.

Secretary Mayo also reported that a request for the announcement of the number of nominating votes received by each candidate was refused.

It was moved and carried that the Secretary's action be approved.

N. S. MAYO.

The Executive Board has decided in favor of New Orleans, La., for the 1919 annual meeting of the A. V. M. A., during the week beginning October 13.

Dr. George Hilton has been appointed a member of the Subcommittee on Journal in place of Dr. W. Horace Hoskins.

Dr. Robert Hamilton, 520 Fort Street, Victoria, B. C., has been appointed resident secretary for British Columbia.

Dr. A. W. French, State Veterinarian, Cheyenne, Wyoming, has been appointed resident secretary for that state, to succeed the late Dr. Millard.

OTHER ASSOCIATIONS

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The 1919 convention of the Pennsylvania State Veterinary Medical Association will be held at Harrisburg, Penn., January 22 and 23, with a full and interesting program.

Among those who are to take part may be mentioned the following: Dr. V. A. Moore, President American Veterinary Medical Association; Dr. J. H. McNeil, State Veterinarian of New Jersey; Dr. J. A. Kiernan, Chief of the Tuberculosis Eradication Division, Bureau of Animal Industry; Dr. John Adams, Veterinary School, University of Pennsylvania; Dr. M. Jacob, State Veterinarian of Tennessee and Treasurer of the A. V. M. A.; Dr. Edw. A. Cahill, Indianapolis; Drs. B. F. Senseman, of Philadelphia, and others.

The subjects to be discussed will include the Practitioner in the Control of Infectious Disease; the Live Stock Industry in South America; the Progress of Tuberculosis Eradication; Some Practical Topics Relating to Surgery; there will be a symposium on hog topics; Purpura Hemorrhagica will be discussed; and there will be a discussion on Infectious Abortion and Sterility in Cattle.

A cordial invitation is extended to all veterinarians, including those in adjoining states, to attend this convention.

T. E. MUNCE, Corresponding Secretary.

STATE VETERINARY MEDICAL ASSOCIATION OF OHIO.

The State Veterinary Medical Association of Ohio will hold its thirty-sixth annual convention at the New Southern Hotel, Columbus, January 9 and 10, 1919.

In this epochal atmosphere this meeting, in many respects, will be the most important in the history of the Association. In fact, the future welfare of the profession may be largely influenced by the spirit of coöperation and policies to be developed at the meeting.

The world-wide upheaval has wrought changes with us as with every other line of work concerned with the best interest of our commonwealth, and with the recognition and privileges accorded our profession has assumed a position and an importance equal in every respect to that of our sister profession, "Human Medicine." In accordance with this elevated standard, and in order to retain the confidence and respect of the modern stock-raiser and the public at large, and if we are to meet these increased obligations successfully, it behooves every veterinarian, whether scientist or practitioner, to keep abreast of the developments and discoveries that are new in his profession.

There is only one way to keep in touch with the progressive changes, and that is to mingle with the leaders, the thinkers and the workers that you will meet at a meeting of this kind.

The program will include a number of men who are intimately and actively associated with matters that are of the utmost importance to the veterinary profession. There will also be in attendance representatives from the Veterinary Corps of our Army who will enlighten us on the demands of the profession by war conditions.

For literature and information concerning the Association, address the Secretary, R. I. Bernath, Wauseon, Ohio.

NEW YORK STATE VETERINARY COLLEGE ANNUAL CONFERENCE.

The annual conference for veterinarians at the New York State Veterinary College, Cornell University, Ithaca, N. Y., will be held January 16 and 17. An instructive program will be provided. This conference is for the practitioners of veterinary medicine in New York State, but any veterinarian who desires to attend will be most welcome. The program will be ready early in January.

V. A. MOORE, Director.

Dr. Hiram T. Gaetz of Buffalo, N. Y., addressed the Western New York Medical Society in December on some historical points in the history of veterinary medicine in America.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS.

Our National Executive Committee is making a big drive for 100% membership in this Association by January 1, 1919, and this office is coöperating with the four zone vice presidents in organizing their respective zones. It is very desirable that we have a large mailing list of active members to properly boost our classification bill when it is introduced. It has been suggested that our members would gladly coöperate in this big membership drive by writing personal letters to their friends in unorganized territory if they know where the non-members were located. The following statement of our membership is therefore respectfully submitted:

EASTERN ZONE.

Zone Vice President: Dr. Leland D. Ives, 104 West 42nd St., New York.

METROPOLITAN DIVISION.	Number of Members
Dr. J. A. Eadie, Secretary, 104 W. 42nd St., New York, N. Y. (Units at New York City and Brooklyn, N. Y., Jersey City, Newark and Paterson, N. J.)	67
BUFFALO (N. Y.) DIVISION.	
Dr. E. T. Faulder, Secretary, 69 Monticello Ave., Buffalo, N. Y.	24
PENNSYLVANIA DIVISION.	
Dr. M. J. Maloney, Secretary, 5423 Christian St., Philadelphia.	26
CLEVELAND (OHIO) DIVISION.	
Dr. Roy F. Leslie, Temporary Secretary, 6805 Bridge Ave., Cleveland, Ohio	12
INDIANA DIVISION.	
Dr. W. W. Shartle, Corresponding Secretary, 413 North New Jersey St., Indianapolis, Ind.	41
MICHIGAN DIVISION.	
Dr. B. J. Killham, Secretary-Treasurer, Court House, Adrian, Michigan	23
Total membership of subordinate associations	193
Total number members at large	10
Grand total membership of Eastern Zone	203

CENTRAL ZONE.

Zone Vice President: Dr. M. Guillaume, in care of Dr. W. N. Neil,
Drovers National Bank Building, 42nd and Halsted Sts., Chicago, Ill.

ILLINOIS DIVISION.	Number of Members
Dr. F. H. Benjamin, Secretary, 6732 Loomis St., Chicago, Ill. . .	134
MISSISSIPPI VALLEY DIVISION.	
Dr. A. J. Maloney, Secretary, National Stock Yards, Ill. (Units at National Stock Yards, East St. Louis, Mounds	

and Jacksonville, Ill., and St. Louis, Mo., and Union City, Tenn.)	46
MISSOURI DIVISION.	
Dr. Ralph Graham, Secretary, Box 59, Jefferson City, Mo.	38
IOWA DIVISION.	
Dr. F. T. Suit, Secretary-Treasurer, in care of T. M. Sinclair & Co., Waterloo, Iowa (estimated).	43
MINNESOTA DIVISION.	
Dr. M. O. Anderson, Corresponding Secretary, 633-34 Live Stock Exchange Building, South St. Paul, Minn.	31
AUSTIN (MINNESOTA) DIVISION.	
Dr. Ray Hoefling, Secretary, 309 S. Franklin St., Austin, Minn.	5
WISCONSIN DIVISION.	
Dr. S. J. Walkley, Secretary, 185 Northwestern Ave., Milwaukee, Wis.	21
Total membership of subordinate associations.	318
Total number members at large.	4
Grand total membership of Central Zone.	322

SOUTHERN ZONE.

Zone Vice President: Dr. J. S. Grove, 215 Exchange Building, Stock Yards Station, Oklahoma, Oklahoma.

DISTRICT OF COLUMBIA DIVISION.		Number of
		Members
Dr. L. B. Ernest, Secretary, Kensington, Md.	36	
VIRGINIA DIVISION.		
Dr. A. H. Denham, Secretary-Treasurer, 418 Lyric Building, Richmond, Va.	13	
WEST VIRGINIA DIVISION.		
Dr. C. E. Mootz, Secretary-Treasurer, 300 Federal Building, Wheeling, W. Va.	6	
OKLAHOMA DIVISION.		
Dr. Leslie J. Allen, Secretary-Treasurer, 408-409 Patterson Building, Oklahoma, Okla.	34	
TEXAS DIVISION.		
Dr. Harry Grafke, Secretary-Treasurer, 606 Flatiron Building, Fort Worth, Texas.	48	
Total membership of subordinate associations.	137	
Total number members at large.	43	
Grand total membership of Southern Zone.	180	

WESTERN ZONE.

Zone Vice President: Dr. B. W. Murphy, 22 Federal Building, Topeka, Kansas.

KANSAS DIVISION.		Number of
		Members
Dr. B. W. Murphy, Secretary, 22 Federal Bldg., Topeka, Kan.. . . .	74	
NEBRASKA DIVISION.		
Dr. A. R. Smith, Secretary-Treasurer, 2615 D St., South Side Station, Omaha, Neb.	50	

SOUTH DAKOTA DIVISION.

Dr. C. L. White, Secretary, in care of Jno. Merrill & Co., Sioux Falls, S. D.....	10
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"MILE HIGH" DIVISION OF COLORADO.

Dr. C. L. Hall, Secretary, Room 303 Live Stock Exchange Building, Denver, Col.....	24
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CALIFORNIA DIVISION.

Dr. G. P. Rebold, Chairman Pro Tem., 836 56th St., Oakland, Cal.....	4
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Total membership of subordinate associations.....	162
Total number members at large.....	35

Grand total membership of Western Zone.....	197
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SUMMARY.

	B. A. I. Veterinarians in Zone.	Members N. A. of B. of A. I. V.	Non-Members
Eastern Zone.....	339	207	132
Central Zone.....	435	322	113
Southern Zone.....	509	180	329
Western Zone.....	359	197	162
Total.....	1642	906	736

Rosters of members of all subordinate associations arranged alphabetically will be published in connection with minutes of proceedings of our Philadelphia convention. Secretaries of subordinate associations should advise this office when their members transfer to other subordinate associations, so that the membership rosters in this office may be properly revised. All subordinate associations and members at large are requested to send to this office the names and addresses of all known non-members in their respective states, reporting result of any correspondence they have had with said non-members. Those associations that have adopted a constitution and by-laws are requested to forward copy of same to this office. In organizing new subordinate associations it would be well to have constitutions of same provide for affiliating with the N. A. of B. of A. I. V.

MEMBERS AT LARGE.

The names and addresses of the members at large of our Association are as follows:

EASTERN ZONE.

Zone Vice President: Dr. Leland D. Ives, 104 W. 42nd St., New York.

NEW HAMPSHIRE.

Carnachan, T. W.....Keene, N. H.

VERMONT.

Spindler, J. E.....Newport, Vt.

MAINE.

Smith, Arthur N.....Portland, Me.
Green, L. K.....Auburn, Me.

MASSACHUSETTS.

Crossman, E. A.....Boston, Mass.
Blake, F. E.....Springfield, Mass.

OHIO.

Staub, A. F.....Dayton, Ohio
Borchers, W. H.....Dayton, Ohio
Hattery, Morton P.....Dayton, Ohio
Homiller, J. P.....Dayton, Ohio

CENTRAL ZONE.

Zone Vice President: Dr. M. Guillaume, in care of Dr. W. N. Neil,
Drovers National Bank Building, 42nd and Halsted Sts., Chicago, Ill.

ILLINOIS.

McDonald, James.....Springfield, Ill.
Plew, J. F.....Springfield, Ill.

IOWA.

Franzmann, P. A.....Davenport, Iowa

MINNESOTA.

Elliott, C. L.....Winona, Minn.

SOUTHERN ZONE.

Zone Vice President: Dr. J. S. Grove, 215 Exchange Building, Stock
Yards Station, Oklahoma, Okla.

KENTUCKY.

Lawton, R. G.....Lexington, Ky.

NORTH CAROLINA.

Yager, E. P.....Washington, N. C.
Blackman, R. A.....Whiteville, N. C.
Knilians, A. J.....Elizabeth City, N. C.
Keiny, E.....Washington, N. C.
Taylor, H. B.....Newbern, N. C.
Smith, M. G.....Wilmington, N. C.
O'Hare, J. S.....Williamston, N. C.

SOUTH CAROLINA.

Riley, Garrie W.....Orangeburg, S. C.

GEORGIA.

Lovejoy, J. E.....Augusta, Ga.
Lemon, Cecil S.....Augusta, Ga.
Boman, Thomas W.....Augusta, Ga.
Springer, George E.....Augusta, Ga.
Latta, Walter R.....Augusta, Ga.
Cole, Guy T.....Moultrie, Ga.
Bevan, A. L.....Moultrie, Ga.
Hall, G. M.....Moultrie, Ga.
Dinse, A. J.....Moultrie, Ga.

ALABAMA.

Tierney, E. N.....Andalusia, Ala.

ARIZONA.

Gaston, John T.....Bisbee, Ariz.

FLORIDA.

Aufente, John R.....Chipley, Fla.

LOUISIANA.

Tuck, R. W.....	New Orleans, La.
Baker, Odie I.....	New Orleans, La.
Cook, Stanley C.....	New Orleans, La.
Tucker, H. H.....	New Orleans, La.
Wishard, Dell E.....	New Orleans, La.
Bruns, G. H.....	Winnfield, La.

ARKANSAS.

Bux, Joe H.....	Little Rock, Ark.
Gregory, M. W.....	Little Rock, Ark.
Connor, D. D.....	Little Rock, Ark.
Young, Clifford.....	Little Rock, Ark.
Swanson, P. O.....	Little Rock, Ark.
Brouse, S. C.....	Little Rock, Ark.
Marsh, E. T.....	Little Rock, Ark.
Kelly, Ray.....	Little Rock, Ark.
Jerome, C. A.....	Little Rock, Ark.
Mills, J. T.....	Little Rock, Ark.
Davis, W. L.....	Little Rock, Ark.
Jung, O. E.....	Little Rock, Ark.
Welsh, R. M.....	Little Rock, Ark.
Christianson, R. B.....	Little Rock, Ark.
Johnson, P. A.....	Little Rock, Ark.
McDonald, W. A.....	Conway, Ark.

WESTERN ZONE.

Zone Vice President, Dr. B. W. Murphy, 22 Federal Bldg., Topeka, Kan.

NORTH DAKOTA.

Cohenour, H. H.....	Bismarck, N. D.
Hollenbeck, J. B.....	Bismarck, N. D.

NEVADA.

Butterfield, L. C.....	Reno, Nev.
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MONTANA.

Beaumont, E. V.....	Billings, Mont.
Berdan, Augustus.....	Great Falls, Mont.
Boyd, B. W.....	Miles City, Mont.
Ehlers, G. H.....	Scobey, Mont.
Ewers, S. V.....	Ft. Keogh, Mont.
Hulbush, Chas. A.....	Sweet Grass, Mont.
Snyder, Rudolph.....	Helena, Mont.
Walker, C. C.....	Helena, Mont.

OREGON.

Blackwell, A. M.....	North Portland, Ore.
Foster, Sam B.....	Portland, Ore.
Hancock, H. J.....	North Portland, Ore.
Joss, E. C.....	Portland, Ore.
Lundell, A. R.....	North Portland, Ore.

CALIFORNIA.

Collins, D. E.....	Arcata, Cal.
Coleman, A. T.....	Los Angeles, Cal.
Echols, B. C.....	Los Angeles, Cal.
Farley, J. A.....	Los Angeles, Cal.
Irons, G. T.....	Los Angeles, Cal.
Kampschmidt, F. L.....	Los Angeles, Cal.
Kellogg, C. F.....	Los Angeles, Cal.
Koen, A. R.....	Los Angeles, Cal.
McFarland, R. A.....	Los Angeles, Cal.
Fuchs, Geo. A.....	Coloma, Cal.
Fields, S. M.....	Pomona, Cal.

Payne, A. J.....	Sacramento, Cal.
Cloud, J. E	San Diego, Cal.
Darling, Robert.....	San Diego, Cal.
Hicks, H. H.....	San Francisco, Cal.
Hurlbut, F.	San Francisco, Cal.

WASHINGTON.

Culbert, R. W.....	Spokane, Wash.
Dye, W. C.....	Walla Walla, Wash.
Henneberger, W. B.....	Walla Walla, Wash.

SUMMARY.

Zone	Number Members at Large
Eastern	10
Central	4
Southern	43
Western	35
Total number members at large.....	92

Extracts from our national constitution as amended and adopted at the Philadelphia convention, August 19-21, 1918:

"Art. 2, Sec. 1. This organization shall consist of state, divisional and district associations and members at large."

"Art. 3, Sec. 1. The membership shall consist of active and honor-ary members."

"Art. 3, Sec. 2. Any veterinarian in the employ of the Bureau of Animal Industry may become a member of this association."

"Art. 10, Sec. 2. The per capita tax to cover the expenses of this association shall be \$3.00 per annum, and shall be collected from all active members by the state, divisional and district associations, and by them remitted to the National Secretary. Members at large shall remit per capita tax direct to the National Secretary. This tax may be paid semi-annually."

All members at large are urged to correspond with B. A. I. veterinarians in their vicinity, urging them to enroll as members of this Association. It would be to the best interests of all concerned to form sub-ordinate associations where conditions are favorable, as we can do some very effective work through such organizations in coöperating with the various live stock sanitary boards and state veterinary medical societies. Where conditions do not favor the formation of subordinate associations, all B. A. I. veterinarians are urged to enroll as members at large.

SPECIMEN CONSTITUTION AND BY-LAWS.

The following constitution and by-laws, adopted by the Wisconsin Division, National Association of Bureau of Animal Industry Veterinarians, is published for the possible assistance it may render other local organizations:

PREAMBLE.

The objects of this division shall be:

1. The advancement of the professional and material interests of the veterinarians of the U. S. Bureau of Animal Industry.

2. To affiliate with the National Association of Bureau of Animal Industry Veterinarians. To coöperate with the American Veterinary Medical Association, the Wisconsin Veterinary Medical Association, United States Live Stock Sanitary Association and the Wisconsin Live Stock Sanitary Board in securing legislation for the mutual advancement of the veterinary profession and promotion of the live stock industry.

3. To coöperate with the officials of the U. S. Department of Agriculture in promoting the efficiency of the Bureau service and to uphold the civil service rules and regulations.

4. To encourage all Bureau veterinarians to become members of the American Veterinary Medical Association.

CONSTITUTION.

ARTICLE I.

Title.

Section 1. This body shall be known as the Wisconsin Division of the National Association of Bureau of Animal Industry Veterinarians.

ARTICLE II.

Membership.

Section 1. The active members shall be the veterinary inspectors of the Bureau of Animal Industry.

Section 2. Honorary members shall be at the discretion of this Division.

ARTICLE III.

Officers, Committees and Elections.

OFFICERS.

Section 1. The elective officers of this Division shall consist of a president, first and second vice presidents, and a secretary-treasurer, all of whom shall be elected by ballot of uniform size and color. A majority of all votes legally cast shall constitute a choice. They shall hold their offices for the term of one (1) year, or until their successors are elected and qualified.

ELECTIONS.

Section 2. All delegates to the national convention shall be nominated three months prior to the meeting of the American Veterinary Medical Association each year.

Section 3. All delegates to the national convention shall be elected two months prior to the meeting of the American Veterinary Medical Association each year.

Section 4. All active members of this Division in good standing and assigned to stations other than Milwaukee and Cudahy, Wisconsin, shall be duly notified by the secretary-treasurer of all nominations, said notice to be accompanied with sufficient blank ballots of uniform size and color for a first and second choice vote. The secretary-treasurer shall request said members to return all ballots in sealed envelopes and said envelopes shall be delivered to the tellers at time of election.

COMMITTEES.

Section 5. The regular committees of this Division to be appointed by the president shall be: an auditing committee consisting of three (3) members and a committee on legislation, consisting of three (3) members.

ARTICLE IV.

Duties of Officers.

THE PRESIDENT.

Section 1. The president shall preside at all meetings of this Division, and be a member of all committees. He shall appoint all committees not herein provided for. He shall sign all warrants drawn on the treasurer, and perform such other duties as the rules and usages of this Division may require of him. He shall have no vote except on questions where the votes are equally divided and in the election of officers.

FIRST VICE PRESIDENT.

Section 2. The first vice president shall perform the duties of the president in his absence, or in the event of his refusal or neglect to perform the duties of his office.

SECOND VICE PRESIDENT.

Section 3. The second vice president shall perform the duties of the president when for any reason those duties are not performed by the president or first vice president.

SECRETARY-TREASURER.

Section 4. The secretary-treasurer shall conduct all correspondence of this Division and keep a correct record of the minutes of the proceedings of this Division. On or about March 1 and September 1 of each year he shall furnish to the National Secretary a report showing the names and addresses of all

B. A. I. veterinarians in the State of Wisconsin, and the names and addresses of all members of this Division, said report to be arranged in alphabetical order by names and stations. On or about March 1 and September 1 of each year he shall remit per capita tax to the National Secretary at the rate of three dollars (\$3.00) per annum, or one dollar and fifty cents (\$1.50) per term of six (6) months, for each active member on the roster of this Division. He shall receive all dues and obligations and issue receipts therefor and report the financial condition of the Division and the names of all members in arrears for dues or other indebtedness to this Division at each meeting. He shall submit at each meeting an itemized statement of all moneys received and disbursed.

ARTICLE V.

Fiscal Year.

Section 1. The fiscal year of this Division shall begin September 1 and end August 31.

Revenues.

Section 2. The annual dues of each active member of this Division shall be four dollars (\$4.00), payable semi-annually on September 1 and March 1.

ARTICLE VI.

Amendments.

Section 1. Any resolution for amending of any article of this constitution shall be offered in writing, duly signed by an active member of this Division in good standing. Such resolution must be adopted by a majority of all votes legally cast.

BY-LAWS.

ARTICLE I.

Meetings.

Section 1. All meetings of this Division not herein provided for shall be called by the president upon request of four active members of this Division in good standing, and three (3) days' notice of all meetings shall be given.

ARTICLE II.

Quorum.

Section 1. Seven (7) members shall constitute a quorum at all meetings of this Division.

ARTICLE III.

Rules of Order.

Section 1. In the deliberations of this body "Robert's Rules of Order" shall be the parliamentary standard and guide in determining questions of order when they are not in conflict with these by-laws.

ARTICLE IV.

Order of Business.

Section 1.

1. Roll call of officers.
2. Reading of minutes of previous meeting.
3. Reading of bills.
4. Report of secretary.
5. Report of treasurer.
6. Report of standing and special committees.
7. Application for membership and election of new members.
8. Reading of correspondence.
9. Unfinished business.
10. New business.
11. Nomination of officers and delegates.
12. Election of officers and delegates.
13. Good and welfare of the Division.
14. Adjournment.

ARTICLE V.

Amendments.

Section 1. These by-laws may be amended in the same manner as provided for amending the constitution.

S. J. WALKLEY, Secretary,
N. A. of B. of A. I. V.

U. S. LIVE STOCK SANITARY ASSOCIATION.

The twenty-second annual meeting of the United States Live Stock Sanitary Association was held in Chicago December 2, 3 and 4 at the Hotel La Salle. The attendance was unusually large this year, not only of members but also of visitors. Every one seemed to enjoy the program and to take an active part in the discussions of the several topics, which included Tuberculosis, Influenza, Blackleg, Hemorrhagic Septicemia, Parasitic Diseases, Necrobacillosis, Hog Cholera, and Contagious Abortion.

The following officers were elected for the ensuing year :

President—G. W. Dunphy, State Veterinarian, Lansing, Michigan.

Vice Presidents—J. H. McNeil, Trenton, N. J.; C. P. Fitch, St. Paul, Minn.; O. H. Eliason, Madison, Wis.; J. S. Anderson, Lincoln, Neb.

Secretary-Treasurer—S. H. Ward, St. Paul, Minn.

MRS. J. A. FLAWS, Clerical Secretary.

NECROLOGICAL.

DR. ROY A. LUZADER.

Dr. Roy A. Luzader, of Morrisonville, Ill., died on October 31 at Bridgeport, Conn., from pneumonia while on an automobile trip. Dr. Luzader was a graduate of the Chicago Veterinary College in 1910, and joined the A. V. M. A. in 1911. He took an active part in Association affairs, and was prominent among the younger practitioners in Illinois.

DR. HUGH R. MILLARD.

Dr. Hugh R. Millard, Cheyenne, Wyo., passed away recently. Dr. Millard had just been appointed resident secretary for that state. He was secretary of the State Board of Seed Commissioners and Deputy State Veterinarian of Wyoming. He died November 25 of pneumonia, and a child of his died a few days later from the same disease.

Dr. Millard was a graduate of the New York State Veterinary College, Ithaca, N. Y., 1911, and joined the A. V. M. A. in 1912.

DR. F. H. ANDERSON.

Dr. F. H. Anderson, a prominent practitioner of Evanston, Ill., died at his old home in Forest, Canada, on December 7, 1918, heart trouble being the cause of death.

Dr. Anderson had retired from practice several years ago. He was not only a very able veterinarian, but took an active part in local and state affairs.

DR. OSCAR J. JOHNSON.

Dr. Oscar J. Johnson, Miles City, Mont., died recently as the result of influenza. He was a graduate of the Ohio State University in 1911, and joined the A. V. M. A. in 1913.

DR. D. R. BENJAMIN.

Dr. D. R. Benjamin, Le Roy, Ill., succumbed to influenza on November 8, and his wife died two days later from the same infection. Dr. Benjamin was a member of the Illinois Veterinary Association, but had not become affiliated with the A. V. M. A.

DR. C. E. BLAKELY.

Dr. C. E. Blakely, Corydon, Iowa, died November 13 as the result of influenza. Dr. Blakely was not, however, a member of the A. V. M. A.

DR. A. L. SEDERHOLM.

Dr. A. L. Sederholm, 1129 5th Avenue, Moline, Ill., died the early part of December. He was born in 1885, and graduated from the Chicago Veterinary College in 1906. The Doctor is survived by his parents and one brother. Burial took place in Riverside.

DR. T. W. TAYLOR.

Dr. T. W. Taylor, Macomb, Ill., died on October 30, after a short illness, from pneumonia.

Dr. Taylor was a graduate of the McKillip Veterinary College in 1917, and joined the American Veterinary Medical Association the same year.

DR. S. P. KENDALL.

Dr. S. P. Kendall, Wood River, Ill., died on October 3. He was a graduate of the McKillip Veterinary College and 1917, and became a member of the A. V. M. A. in 1917.

DR. S. H. WARD.

Dr. S. H. Ward, State Veterinarian of Minnesota, died at his home in St. Paul, December 13, of influenza complications.

Dr. Ward was attacked with influenza while attending the U. S. Live Stock Sanitary Association meeting in Chicago, and was confined to his room for several days, but appeared to have recovered, and returned home on December 6.

Dr. Ward was a graduate of the Ontario Veterinary College in 1894, and joined the A. V. M. A. in 1898, and has taken an active part in the work of the Association ever since. He was Chairman of the Committee on Intelligence and Education in 1916-1917, and had served on other important committees. He had been President of the United States Live Stock Sanitary Association, and was Secretary-Treasurer at the time of his death.

I have known Dr. Ward for many years and was closely associated with him for two years on the Committee on Intelligence and Education.

He was a modest man of sterling character and of rare good judgment and constructive ability. The better one knew him, the more his real worth was manifest. A genial companion, a true gentleman, and a loyal, unselfish friend. S. H. Ward, I salute you! *Vale!*

N. S. M.

WILLIAM DEMPSTER HOARD.

In the ripeness of 82 years—most of them spent in elevating farm dairying from drudgery to a plane of dignity—William Dempster Hoard died November 22 at his home in Fort Atkinson, Wisconsin. With meager opportunities and facing discouragement almost crushing at times, Governor Hoard carved for himself a career of service to his own and future generations.

Outstanding events of his life show how an early interest in dairying bore results which he lived to enjoy but which were so numerous that multitudes shared in the benefits. Born October 10, 1836, at Stockbridge, N. Y., Governor Hoard received a country district school education and at the age of 16 went to work as a hired man on a large dairy farm nearby, where he learned butter and cheese making.

In 1857 he moved to Wisconsin and supported himself by teaching school and cutting wood for 25 cents a cord. He married

in 1860 and enlisted in the Army the following year. After the Civil War, he engaged in the nursery business at Columbus, Wis., because, as Governor Hoard said, "there was no work for me to do in Wisconsin as a butter or cheese maker." During the 70's and 80's he urged Wisconsin farmers to engage in dairying and was among the pioneers to organize the Wisconsin State Dairyman's Association, the first of its kind in America. In 1885 he started Hoard's Dairyman as a four-page sheet. In 1888 he was elected Governor of Wisconsin and his administration was marked by much constructive legislation, including the creation of the dairy and food commission and similar measures for the advancement of the dairy industry.

Big-hearted and kind himself, he saw clearly the need for dairy laws and rigid inspection to protect the future industry against practices that would rob it of dignity and interfere with its best development. Time has indorsed his early judgment in these and countless other matters. With the passing of Governor Hoard—the dean of dairying in America—a beloved leader disappears from among us, while another name is inscribed on the scroll of national honor.

If all of the people in Fort Atkinson, Wis., had belonged to one great family, and the late Governor had been the head of that family, no more reverence, respect, and devotion could have been shown to his memory than was indicated on the day of the burial. The entire business of the city was suspended for the day and the people all took part in the funeral ceremonies. One of the most impressive parts of the services was a double procession of school children several blocks long through which the funeral procession passed. Governor Hoard was a great favorite of the children and this manner of showing their feeling for his memory was most impressive.

Both the Bureau of Animal Industry and the veterinary profession were represented at the funeral in the persons of Assistant Chief Rawl and Dr. A. E. Behnke of Milwaukee, who acted as honorary pallbearers. All members who attended the Chicago convention of our Association in 1909 recall with pleasure the able address of Governor Hoard on the dairy industry, after which the Governor was unanimously elected to honorary membership in the American Veterinary Medical Association.

J. R. M.

MISCELLANEOUS.

DR. J. G. RUTHERFORD CHOSEN MEMBER OF CANADIAN RAILROAD BOARD.

Intense interest is manifested in Western Canada over the appointment of Dr. J. G. Rutherford of Calgary to be member of the Dominion Railway Commission in place of D'Arcy Scott, whose ten-year term has expired. Dr. Rutherford is the first western man to win a position on the board, and the fact that he has been very closely identified with the agricultural interests of the western prairies, first as Dominion Live Stock Commissioner and later as head of the irrigation work and the live stock branch of the Canadian Pacific Railway, is pointed to as significant of the growing importance of the live stock industry and the new attitude toward the problems of the west. Heretofore the members of the Railway Board have been lawyers and railroad men.

"No better choice could be made," says the Calgary *Albertan*, editorially, adding, "He knows Western Canada as few men know it. He is well acquainted with agricultural problems, and he is not unfamiliar with railway matters. He is a sage in his way, a man with a wonderful amount of valuable information, a keen reader of human nature, with a rare sense of justice. He will be an ideal member of that very important board, the Dominion Railway Board."

Dr. Rutherford is the dean of live stock men in Canada, and is widely known in the United States as well as in Canada, for he has held many important posts and done professional work of a high order.

Born on December 5, 1857, the son of the Rev. Robert Rutherford, M. A., he received his first education in the Glasgow, Scotland, high schools, and finished his studies at the Ontario Agricultural College and the Ontario Veterinary College. He later practiced veterinary medicine in Canada, the United States and in much-troubled Mexico.

In 1884 he went to Portage la Prairie, where besides practicing his profession he undertook horse breeding. From 1887 to 1892 he was government veterinary inspector for Manitoba,

and a member of the provincial parliament. He went to parliament in 1887.

Dr. Rutherford held the post of Dominion veterinary director general from 1902 to 1912, and was Dominion Live Stock Commissioner from 1906 to 1912. He was also the Canadian representative to the International Institute of Agriculture, held in Rome, Italy, and delegate to the International Congress on Tuberculosis, held in Washington, D. C. In 1908 he was elected president of the American Veterinary Medical Association.

He was chairman of the International Commission of Control of Bovine Tuberculosis; president of the Dominion Horse Breeders' Association, president of Western Canada Live Stock Union, and served as veterinary officer to the Northwest Field Force, and in the Riel Rebellion.

G. LEININGER, Clay, Robinson & Co.

DRAFT OF B. A. I. V. CLASSIFICATION BILL.

At the first national convention of the National Association of Bureau of Animal Industry Veterinarians, held in conjunction with the fifty-fifth annual session of the American Veterinary Medical Association, Philadelphia, Penn., August 19-22, 1918, a classification bill was adopted which is to be presented to Congress and which contains the following salient features:

Class A—Entrance salary of \$2,040 per annum, with an annual increase of \$120 until their salaries shall be \$2,520 per annum; for veterinary inspectors assigned to any form of routine work conducted by the Bureau of Animal Industry.

Class B—Salary \$2,640 per annum, with annual increase of \$120 for each year they serve, not to exceed \$3,240 per annum; for veterinary inspectors assigned to a supervisory work under the direction of an inspector in charge in any branch of the service conducted by the Bureau, inspectors in charge at small stations, assistant inspectors in charge at large stations, and veterinary inspectors assigned to investigational work by the Chief of the Bureau.

Class C—Salary \$3,400 per annum, with an annual increase of \$120 until their salaries shall be not less than \$4,000 per annum; for veterinary inspectors assigned to stations of greater importance than Class B, and those doing special investigational work for the Bureau.

JAPANESE-ENGLISH ROAD RULES.

Some Japanese-English rules of the road have been issued as a guidance to the conduct of motor drivers in the Flowery Kingdom. They read like this:

“At the rise of the hand of policeman stop rapidly. Do not pass him by or otherwise disrespect him.

“When a passenger of the foot hove in sight, tootle the horn trumpet to him melodiously at first. If he still obstacles your passage tootle him with vigor and express by word of the mouth the warning ‘Hi. Hi.’

“Beware of the wandering horse that he shall not take fright as you pass him. Do not explode the exhaust at him. Go soothingly by.

“Give big space to the festive dog that make sport in the roadway. Avoid entanglement of dog with your wheel spokes.

“Go soothingly on the grease mud, as there lurk the skid demon. Press the brake of the foot as you roll round the corners and save the collapse and tip up.”—Exchange.

HORSES HELPED TO WIN THE WAR.

A correspondent of the Sunday Journal thinks the horse is in danger of disappearing. But the faithful beast has survived all the vicissitudes of tractor competition up to date and we can still be hopeful for his future.

The correspondent says:

It may not be during this generation, but it does seem to me that it will be in the not far distant future that the faithful horse will become extinct. Of course, this stage will be reached only gradually, as the animal is still and will be for years to come popular as an important adjunct to the sporting game.

The horse, as a matter of fact, is a good deal more than “an important adjunct to the sporting game.” He is doing his full share in the work of the world. For one thing, he helped to win the war. A great host of horses and mules were shipped to the battle front. They were invaluable for the transportation of supplies and the smaller guns. They can go where it is impracticable for motor cars to penetrate. They are still in active use; moreover, in the cavalry branch of the service, the prophets who thought that the horse-borne soldier was obsolete have been confounded by the recent events.

"If," says the Sunday Journal correspondent, "the horse is displaced with the same rapidity in the next ten years that it has been in the past ten years, I believe that I shall not be far out of the way in my theory."

Let us see.

From the latest issue of the Government Statistical Abstract the following figures are taken of the number of horses in the United States:

1850.....	4,336,719
1860.....	6,249,174
1870.....	8,249,000
1880.....	11,202,000
1890.....	14,214,000
1900.....	13,538,000
1910.....	21,040,000
1915.....	21,195,000
1916.....	21,159,000
1917.....	21,210,000

These figures speak very eloquently for themselves. There are more horses in the United States today than ever before—or there was in 1917. In spite of our shipments to Europe, it is safe to say we have something like 21,000,000 left.

It is plain enough that the horse is in no immediate danger of becoming extinct. If he is a less familiar sight on our city streets, nevertheless there are abundant tasks for him elsewhere. We have an interesting light on the whereabouts in further figures from the Statistical Abstract. In 1900 there were 18,267,020 horses on farms, and in 1910 the number had risen to 19,833,113.

In spite of the introduction of the farm tractor, the horse continues to be an invaluable industrial factor in America. We see him less often than formerly attached to a buggy, surrey or carryall. He has been ousted from the fashionable private stable by the invading motor car. The old-time procession of hacks at funerals is giving way, it appears, to the "automobile cortege." But the horse has a secure place in our national scheme of things. He is "sure of his job" for an indefinite time to come.—Providence Journal.

FARMERS AHEAD RAISING HORSES.

Prosperity for the American farmer will come riding in on the broad back of the Belgian draft horse. That is the opinion of J. D. Conner, Wabash, Ind., secretary of the American Association of Importers of Belgian Horses.

"There is a demand for 1,000,000 tractors in the United States," he said in an interview. "Add to that the new foreign demand and see how long it will be before this country is fully equipped. It won't be during your lifetime. Then remember the horse must be used along with the tractor.

"The war with its record of killing 5,000 horses a day has made it certain there will be a horse famine. There was shortage in 1914. Since then a million and a half horses have been exported.

"Belgium has representatives in this country to buy Belgian horses. Other European countries will make America the world's market for draft horses. The high price of feed will be no detriment to the business. The American farmer will find it profitable as well as patriotic to reach the maximum of production in good horses as well as other farm products."—Exchange.

Dr. J. R. Love has advised the Baton Rouge, La., office, supervising the work of tick eradication, that he expects to be mustered out of the army at an early date and would report for duty during the current month.

Dr. E. I. Smith, Inspector in Charge of the work of tick eradication in the State of Louisiana, attended the meeting of the United States Live Stock Sanitary Association, Chicago, Ill., and visited friends in New York State on his return.

Mrs. R. T. Churchill, widow of Lieutenant Churchill of the N. A. V. Corps, who died at West Point, was a victim of influenza followed by pneumonia and passed away early in November in New York City.

Dr. M. V. Springstun has been transferred from the Baton Rouge, La., tick eradication force to the same work on the Fort Worth, Texas force.

The New York State Veterinary College at New York University received a second gift in November of \$5,000 from one of New York's good women who has become interested in veterinary medicine.

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

W. H. DALRYMPLE, Editor.

BATON ROUGE, LA.

V. A. MOORE, President, Ithaca, N. Y. N. S. MAYO, Secretary, Chicago.
M. JACOB, Treasurer, Knoxville, Tenn.

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Sub-Committee on Journal

J. R. MOHLER

GEO. HILTON

R. A. ARCHIBALD

The American Veterinary Medical Association is not responsible for views or statements published in the JOURNAL, outside of its own authorized actions.

Reprints should be ordered in advance. A circular of prices will be sent upon application.

Vol. LIV., N. S., Vol. 7.

January 15, 1919.

No. 5.

THE EXTRA EDITION.

The Extra Edition this year, like previous similar ones, is a business rather than a scientific number of the Journal.

Its purpose is mainly to have compiled, in a single edition, the business proceedings of the previous annual meeting of the Association, thereby permitting of the regular monthly Journals being devoted to phases of a more scientific character. In addition, it is intended to act as a reference number, containing, as it does, a copy of the Constitution and By-Laws, the officers of the Association for the ensuing year, the personnel of the various committees, etc., and, finally, a directory, alphabetically arranged, of the membership of the Association to December 18, 1918.

Demobilization at the various camps throughout the country has brought about a condition in the Journal office which may take some little time to overcome, particularly in connection with the mailing list, which was more or less complete up to the time the regular January number was sent out. Now, however, we are receiving cards from the various camp postoffices stating that the last copies were undeliverable, as the addressees had gone from camp and had changed their addresses.

While this is quite unavoidable, it means a considerable revision and correction of the mailing list before a future issue can be placed in the mail, which is likely to cause delay in delivery, not only of the Extra Edition, but of the regular February number of the Journal, although the office will employ every available effort to reduce the inconvenience to the minimum. We feel that our members and subscribers are due this explanation, so that they may understand the reason why their copies are late, if they should be, and that it was due to circumstances over which we had little or no control.

FIFTY-FIFTH ANNUAL MEETING OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, HELD AT THE BELLEVUE-STRATFORD HOTEL, PHILADELPHIA, PENN.

BUSINESS SESSION OF MONDAY MORNING, AUGUST 19, 1918.

The meeting was called to order by President Torrance, of Ottawa, Canada, at 10:30 a. m., as follows:

President Torrance: Ladies and Gentlemen: If you will come to order we will open this great convention by calling upon the Reverend Doctor Trout to pronounce the invocation. (Rev. Dr. Trout, of the Erie Avenue Methodist Church, Philadelphia, invoked Divine blessing).

President Torrance: You will note this morning, ladies and gentlemen, that an innovation has been made in our programme, a very pleasant one, in that the international anthems will be sung, of our respective countries, the lady at the piano leading in the singing. I think we would better sing these verses standing.

(The Convention assembled rise and sing one verse each of the following national anthems: The Star-Spangled Banner, The Maple Leaf Forever, La Marseillaise).

President Torrance: I have now very great pleasure in introducing to you the Honorable E. J. Cattell, who represents the Mayor of Philadelphia. From what I hear of him we are about to have a great treat—and he needs no further introduction. (See October Journal.)

President Torrance: You will agree with me that what I said about the treat we were to have was not guff; it was the truth. We all enjoyed that speech tremendously, and we have now to call upon one of our honored members, honored in this respect, of having to answer and respond to the speech we have heard. I call upon Doctor Veranus A. Moore to respond to the speech we have heard. (See November Journal.)

President Torrance: The next order of business is the President's address. I little thought when I was assisting in the preparation of the new By-Laws of the Association, consenting to the elimination of the word "short" with reference to the President's address, that I was likely to have to fill the role of having to give that address in the future. The word "short" has been taken out of the by-law in which the President's duties are enumerated. He is no longer required to give a short address, but he is required to give "an address." I don't wish to alarm you in regard to the probable length of my address, but assure you that I tried to make it as short as possible.

(See September Journal.)

President Torrance: The Secretary has some announcements to make.

Acting Secretary Day: The ladies will assemble at Room 107 and Room 108, on this floor, at 12:30. I believe that is the Ladies' Auxiliary. The Bureau of Animal Industry Veterinarians will have a meeting at 2:00 p. m. today in the Pink Room.

President Torrance: The next order of business, gentlemen, is the presentation and adoption of the Minutes of the previous meeting.

Dr. W. Horace Hoskins: I move their adoption as printed in the Journal of the Association.

(The motion was seconded, and, on vote, carried unanimously.)

President Torrance: The next order of business is the report of the Executive Board.

Acting Secretary Day: The Executive Board recommends that the sum of \$500 be placed in the hands of the Auxiliary Relief Fund for their use in meeting emergencies of members of the profession or their families, the Committee to make a complete report to the Association regarding the disbursements.

Dr. W. Horace Hoskin: I move the adoption of the recommendation. (The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also recommends that in the absence of a member of the Executive Board from the annual meeting a temporary appointment for that meeting only may be made by the President. The temporary appointee shall be from the same district which the absent member represents.

I might say in connection with this recommendation that at the present time one of our members of the Executive Board is absent. That is Dr. R. A. Archibald, from District No. 5. And this recommendation was made in order that this vacancy on the Executive Board may be filled at once.

Dr. W. Horace Hoskins: I move its adoption.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: Last year there was a resolution accepted calling for the division of the Second District, the Second District being such a very large one. Therefore, the Executive Board recommends that the Second District be divided, creating a new district, to be composed of Illinois, Ohio, Wisconsin, Michigan and Indiana; and also that the numerical order of the districts be changed; that is, that the Second District be composed of the eastern portion of what is now known as the Second District, and the new district to be called the Third District, the Third District to be the Fourth District, the Fourth District to be the Fifth District, and the present Fifth District to be the Sixth District; and that the member of said new district be elected for five years.

President Torrance: You have heard this recommendation of the Executive Board. What is your pleasure?

Dr. W. Horace Hoskins: I move its adoption.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also recommends to the Association that the words "Or President and Editor" be inserted in line 2, after the word "Secretary," in Section 5 of Article 5 of the Constitution.

For your information I will read it as it now appears:

"The Treasurer shall pay out moneys only on vouchers countersigned by the President and Secretary, excepting minor expenses of the Secretary, and such revolving fund

allowance as may be placed at the disposal of the Editor and Manager of the 'Journal' by the Budget Committee."

The paragraph will read, in accordance with the recommendation of the Executive Board, as follows:

"The Treasurer shall pay out moneys only on vouchers countersigned by the President and Secretary, or President and Editor, excepting minor expenses of the Secretary, and such revolving fund allowance as may be placed at the disposal of the Editor and Manager of the 'Journal' by the Budget Committee."

The idea of this was so that the "Journal" could take care of its own funds.

Dr. W. Horace Hoskins: I move its adoption.

(The motion was seconded by Dr. Kinsley.)

Dr. N. S. Mayo: In regard to that resolution I would like the one that was proposed changed, read again.

Acting Secretary Day: You wish me to read the proposed resolution, or from the By-Laws?

Dr. Mayo: The resolution.

Dr. Torrance: I understand Dr. Mayo wants the resolution read as it will be when adopted.

Dr. Mayo: No, I just want the resolution read as adopted by the Executive Board.

Acting Secretary Day: As it now stands in the Constitution it reads as follows:

"The Treasurer shall pay out moneys only on vouchers countersigned by the President and Secretary, excepting minor expenses of the Secretary, and such revolving fund allowance as may be placed at the disposal of the Editor and Manager of the 'Journal' by the Budget Committee."

Would you like me to read how it will be when changed?

Dr. Mayo: Yes, thank you.

Acting Secretary Day:

"The Treasurer shall pay out moneys only on vouchers countersigned by the President and Secretary, or President and Editor, excepting minor expenses of the Secretary, and such revolving fund allowance as may be placed at the disposal of the Editor and Manager of the 'Journal' by the Budget Committee."

President Torrance: It has been moved and seconded that this recommendation of the Executive Board be adopted. All those in favor signify by saying aye; contrary, no. The motion is carried.

Dr. Winchester: Can you change the Constitution right at this meeting, without considering it?

President Torrance: Dr. Winchester has raised the point whether we can change the Constitution at this meeting. The Constitution, as I understand it, can only be changed after the giving of due notice. Has due notice been given of this change, Dr. Day?

Acting Secretary Day: No.

President Torrance: Notice was given of the first change, as given by the Board, but not of the second, and if there is any objection to putting it through without notice, it certainly is illegal, and not in accordance with the By-Laws.

Dr. W. Horace Hoskins: This is for the interest of the Association, and to allow the Editor of the "Journal" to carry on his work; and in order to facilitate I move that we suspend the Rules.

(The motion was seconded by Dr. Kinsley.)

President Torrance: It requires a two-thirds vote to suspend the Rules, I understand.

A Member: Three-fourths' vote.

President Torrance: All in favor of the suspension of the Rule, signify by saying aye—

Dr. Mayo: I would like to ask for information. I would ask the Secretary if this proposed change comes in a section of the Constitution and By-Laws that notice was given last year to change? I understood, as you read that first, that notice having been given last year of a change—and then you suggested two changes.

Acting Secretary Day: That notice pertains only to the division of District No. Two and the creation of a new district.

Dr. Mayo: That was only in reference to that changing the Districts?

Acting Secretary Day: Yes. There was a notice given last year with reference to the division of the districts. The other change in the Constitution and By-Laws, adding the words "or President and Editor"—there was no notice given of that, because it only came up at this meeting, and there was no opportunity for a notice.

President Torrance: Are you ready for the question? All in favor of the suspension of the By-Laws for the purpose of passing this amendment to the Constitution will signify by saying aye; contrary, if any, no. The ayes have it, and the Rules are suspended. I will now put the main question. All in favor of this change in the Constitution signify by saying aye; contrary, no. The ayes have it, and the change is adopted.

Dr. Mayo: I think that it should go on the Minutes that this change was made by unanimous consent.

President Torrance: Will you move that the vote be made unanimous?

Dr. Mayo: There was no opposition. The notation should be made that this was by unanimous consent.

President Torrance: The Secretary will record the fact that this was by unanimous consent.

Acting Secretary Day: There is also a recommendation that follows the dividing of the Second District; it is to the effect that the word "Seven" be inserted in lieu of the word "Six" in line 1, Section 7, Article 5 of the Constitution and By-Laws.

Dr. W. Horace Hoskins: I move it be adopted.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also recommend that the Budget Committee make an investment of from three to five thou-

sand dollars in Canadian War Bonds and of from three to five thousand dollars in United States War Bonds.

Dr. Kinsley: I move its adoption.

(The motion was seconded by Dr. W. Horace Hoskins.)

Dr. Mayo: I believe this matter was thoroughly canvassed by the Executive Board, and that they know the condition of the treasury. I believe it most desirable that it should be done.

Dr. W. Horace Hoskins: The income this year is the largest in the history of the Association, from the 1017 applicants for membership.

President Torrance: It has been moved and seconded that this recommendation be adopted. All those in favor signify by saying aye; contrary, no. The ayes have it, and the recommendation is adopted.

Acting Secretary Day: The next recommendation of the Executive Board is that with regard to new applicants. You will find a list on your seats of 800 of the applicants, the other 217 were received too late for the published list. Turn to the first page, under Arkansas. The Executive Board favorably recommends the election of all the applicants from Arkansas.

Dr. W. Horace Hoskins: I move we approve that recommendation.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: All of the applicants from California are favorably recommended by the Executive Board, with the exception of Walter P. Kelty, the fourth name.

Dr. W. Horace Hoskins: I move the adoption of the recommendation.

(The motion was seconded.)

Dr. W. Horace Hoskins: I think it ought to be understood that the reason we cannot recommend Dr. Kelty is because the San Francisco College, of which he is a graduate, was not recognized by this Association in the year 1918.

(The motion was put to a vote, and carried unanimously.)

Acting Secretary Day: Under Colorado the Executive Board recommend the election of Dr. W. L. Corson only; and Joseph P. Mitchell is unfavorably recommended for the same reason as Walter P. Kelty of California.

(It was moved and seconded that the recommendation of the Executive Board be adopted. On vote the motion was carried unanimously.)

Acting Secretary Day: All of the members from Connecticut and Delaware are favorably recommended for election by the Executive Board.

Dr. Mayo: As I understand the case of Dr. Mitchell, he was not recommended because he was a graduate of a college that was not recognized by this Association at the time of his graduation. Now, in the case of Dr. Ahern, of Connecticut, he seems to be a graduate of the same college in the same year. Am I correct in my conclusion?

Acting Secretary Day: I read Dr. Ahern's name, but it was an oversight on my part, Dr. Mayo. I now make the correction and read

Dr. Ahern as being rejected, so that the ones to consider now are the ones from Delaware.

(It was moved by Dr. W. Horace Hoskins that the recommendation of the Executive Board be adopted. The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: Under the District of Columbia the Executive Board favorably recommend the election of all with the exception of Clarvoe and McCallum.

Dr. W. Horace Hoskins: I move that the recommendation of the Executive Board be adopted.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: Under Florida the Executive Board recommend the election of all the members.

(It was moved by Dr. Hoskins and seconded by Dr. Kinsley that the recommendation of the Executive Board be adopted. On vote the motion was carried unanimously.)

Acting Secretary Day: Georgia—I wish to make an announcement. You will notice on the second page of the list from Georgia that there are a large number with the colleges and the vouchers not given. The reason was we did not have the applications at the time this list was printed; our only information was a typewritten list. They are all vouched for by Major W. J. Stokes and Lieutenant Otis A. Longley. They are from various colleges and states all over the country. The Executive Board recommends the election to membership of all from Georgia with the exception of G. E. Gilbert and F. H. George, on the first page; Harry K. McIntosh, on the second page; Harley E. Ash, Frank O. Brontrom, Otis G. Button, Charles P. Cooke, Edward A. Dornbusch, L. W. Foley, Gustave B. Henno, on the third page; William D. James, Cecil P. Lamb, Carle B. Lenker, Raymond E. Libby, Louis H. Mathers, Archibald F. McGreevy, Lee L. Menke, V. C. Pahlman, William L. Peterson, Chauncey O. Petry, Edgar M. Rogers, Louis P. Sharp, Guy M. Smith, Carl Viers and R. M. Ward.

Dr. John R. Mohler: I would like to correct the statement of the Secretary. R. M. Ward was vouched for by Dr. Kinsley after the first submission of the report; and also, on the first page, R. M. Ashley approved of G. E. Gilbert and F. H. George. The reason for the deferment of these men is that they were not vouched for by members from their own states.

Dr. Kinsley: I should like to ask the Secretary concerning Hopper, Lodge, Mathers, Moylan, Schopmeyer and Secoy.

Acting Secretary Day: I have nothing against Hopper on this list.

Dr. Mohler: Hopper is all right.

Acting Secretary Day: Which is your next one?

Dr. Kinsley: Lodge.

Acting Secretary Day: I have him deferred.

Dr. Connaway: I would like to make a general motion which I believe will settle the whole list, and that is to elect all of the members in this list whom the Executive Board shall later find to meet the requirements of admission to our Association. It will be impossible

for us to get the information from this body at the present time, and I believe we can safely leave it to the Executive Board to get that information more at their leisure.

Dr. W. Horace Hoskins: It will be impossible to do that. The idea of getting the names in at this session of the Convention was so that the applicants accepted may vote during this meeting.

A Member: What is required?

Dr. Hoskins: One of the two vouchers required must be from the state in which the applicant is a resident.

Dr. Connaway: Does it mean that all have been vouched for except the ones read?

Dr. Hoskins: Yes, one voucher at least from their respective states.

Dr. Quitman: I should like to have that list read over. Some of these men, I think, we can qualify at this meeting.

President Torrance: That is the reason for the reading of the list.

Dr. Mayo: I would like to ask another question. The Secretary can answer it at the same time. I notice there are two G. E. Gilberts from Chickamauga Park. Is that a typographical mistake or are there actually two G. E. Gilberts? On the first page the name is given as Goerge E. Gilbert and on the second page G. E. Gilbert is given as not recommended.

Dr. Mohler: The second man graduated from Terre Haute, and the first man you mentioned is from Michigan.

Acting Secretary Day: I was going to give that information; and I will look it up on the application if Dr. Mayo wishes me to do so.

I will read this list over and ask any member of the Executive Board if they have favorably recommended any that were previously deferred. I want to have my list the same as their lists. The first I have now is on the second page: Harry K. McIntosh, Harley E. Ash, Frank O. Bronstrom, Charles P. Cooke. On the next page, Gustave B. Henno, Cecil P. Lamb, Charle B. Lenker, Raymond E. Libby, Harry G. Lodge, Lewis H. Mathers, Archibald F. McGreevy, Lee L. Menke, Edward J. Moylan, V. C. Pahlman, William L. Peterson, Chauncey O. Petry, Edgar M. Rogers, Charles W. Secoy, Louis P. Sharp, Guy M. Smith, Carl Viers and Paul A. Weires.

Dr. Kinsley: Mr. President, I would like to ask the Secretary concerning Button.

Acting Secretary Day: Otis G. Button is on my list.

Dr. Kinsley: You did not read him the second time. I should also like to ask about Dornbusch.

Acting Secretary Day: He is on my list. I did not read the name of Foley, did I? I must have missed all on that page.

Dr. Kinsley: And Schopmeyer, on the last page.

Acting Secretary Day: Schopmeyer is not deferred on my list..

Dr. Mohler: I think Dr. Schopmeyer was vouched for by Dr. Northrop.

Dr. Hoskins: I move that with the exception of these deferred names we approve the list.

(The motion was seconded by Dr. Kinsley.)

President Torrance: It has been moved and seconded that with

the exception of those names deferred, we approve the list. All those in favor signify by saying aye; contrary, no. The ayes have it, and the motion is carried.

Acting Secretary Day: I would like very much to make this statement, gentlemen; that now that you have marked those who have been deferred, if any of you know them or know any one who would vouch for them, we would be very glad to have you come forward, or see you after adjournment, so that we may get these applicants properly vouched for.

The next is Illinois—the Executive Board recommend that all members appearing on the list under Illinois be elected to membership with the exception of Joseph Henry Krichel. You will find his name the second line on the second page of Illinois.

Dr. Quitman: What is the trouble there?

Acting Secretary Day: The same as with the others—he is at Camp Grant, and we need some one from his state to vouch for him.

Dr. Quitman: Do you know what state he is from?

Acting Secretary Day: He is from Illinois.

Dr. Quitman: I will sign his application.

Dr. Kinsley: I move the adoption of the recommendation of the Executive Board in regard to Illinois.

(The motion was seconded, and, on vote, carried unanimously.)

President Torrance: It is understood that Dr. Quitman will sign for Dr. Krichel, who was deferred.

Acting Secretary Day: In regard to Indiana, the Executive Board recommends for membership all the names from this state as printed in the list.

(It was moved and seconded that the recommendation of the Executive Board be adopted. Motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all the applicants from the State of Iowa.

(Dr. Kinsley moves the adoption of the recommendation of the Executive Board with regard to Iowa. The motion is seconded by Dr. Hoskins, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all the applicants from the State of Kansas with the exception of Maurice V. Wilmot. It is next to the last name on the second page under Kansas.

Dr. Kinsley: I move the adoption of the recommendation of the Executive Board with regard to Kansas.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all of the applicants from the State of Connecticut.

Dr. Hoskins: I move the adoption of the recommendation of the Executive Board with regard to the State of Connecticut.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all the applicants from the State of Louisiana.

(It was moved by Dr. Hoskins and seconded by Dr. Kinsley that the recommendation of the Executive Board with regard to the States of Louisiana be adopted. On vote the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all the members from the States of Maine and Maryland as printed in the list.

(It was moved by Dr. Hoskins and seconded by Dr. Kinsley that the recommendation of the Executive Board with regard to the States of Maine and Maryland be adopted. On vote the motion was carried unanimously.)

Acting Secretary Day: And also of Massachusetts.

Dr. Hoskins: How about Creedon?

Acting Secretary Day: Creedon has been vouched for by U. M. Simpson and E. A. Paulson, both of Massachusetts.

Dr. Hoskins: I move the recommendation of the Executive Board with regard to Massachusetts be adopted.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: Also the State of Michigan.

Dr. Hoskins: I move that we approve the recommendation of the Executive Board with regard to the State of Michigan.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also approve all of the applicants from the State of Missouri.

Dr. Hoskins: I move the adoption of the recommendation of the Executive Board with regard to the State of Missouri.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Dr. Kinsley: Minnesota has one in there.

Acting Secretary Day: I thank you for calling my attention to it. The Executive Board recommend for membership the applicant, George P. Lynch, from Minnesota.

(It was moved and seconded that the recommendation of the Executive Board with regard to the applicant from Minnesota be adopted. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend for membership the list of applicants from Mississippi with the exception of Leander I. Lucey.

Dr. Kinsley: Could not the same remark be applied, that Dr. Lucey has no voucher.

Acting Secretary Day: We want somebody to vouch for Dr. Lucey. He has been deferred on that account.

(It was moved and seconded that the recommendation of the Executive Board with regard to the State of Mississippi be adopted. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Board also recommend the election of those members from Montana.

Dr. Hoskins: I move that we adopt the recommendation of the Executive Board with regard to the State of Montana.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also recommend the election to membership of all the applicants from the State of Nebraska, with the exception of Thomas W. Stewart.

Dr. Hoskins: I move that we adopt the recommendation of the Executive Board with regard to Nebraska.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend the election to membership of all the applicants from the State of New Jersey, with the exception of Fischel Birenberg, the very first one.

Dr. Herbert Lowe: I would deem it a pleasure to move the election of these gentlemen, but before doing so I would state that some of these gentlemen are not members of the Veterinary Association of New Jersey and are not active in it, and I would like to know particularly as to who vouched for them, because I feel, Mr. President and gentlemen, that members coming into this national and international organization ought to be well known at home in the work of their own state association; and before recommending their election I would ask the information as to their home activities.

Dr. Hoskins: I wish to call the gentleman's attention to the fact that four of these men are employees of the Bureau of Animal Industry and are being moved from state to state; and there is one Army man among them. Also, this movement to bring in the Bureau of Animal Industry Veterinarians is country-wide, and it is not a question as to whether they are members of their state associations where they reside, but that they are members of the Bureau of Animal Industry.

Dr. Lowe: Is Frank E. Pinkerton a Bureau of Animal Industry man?

Dr. Hoskins: Yes.

Dr. Kinsley: The provision that the men should belong to their state associations does not apply to Bureau or Army men.

Dr. Hoskins: I move that we adopt the recommendation of the Executive Board with regard to the applicants from New Jersey to the Bureau of Animal Industry men.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend that all of the applicants from the State of New Mexico be made members.

Dr. Kinsley: I move that the recommendation of the Executive Board with regard to New Mexico be adopted..

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: They also recommend the election to membership of the list from Nevada.

Dr. Kinsley: I move the adoption of the recommendation by the Executive Board with regard to Nevada.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board also recommends that the applicants from the State of New York be elected members.

Dr. Hoskins: I am requested to state that the name of Frederic W. Shoneweg be referred back to the Board. With that exception I

move that we adopt the recommendation of the Executive Board with regard to New York.

Dr. Kinsley: I second the motion.

Dr. Mayo: I don't know anything about this at all. I understand the motion was to refer this case back to the Executive Board—but I don't want it to go through with that exception if it would shut him out.

Dr. Torrance: The resolution elects the others but not him, referring him back.

(On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend that all of the applicants from North Carolina, with the exception of Percy Graham, be elected to membership.

Dr. Hoskins: I move that we adopt the recommendation of the Executive Board with regard to North Carolina.

Dr. Kinsley: I second the motion.

(On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend that the list of applicants from North Dakota be elected members.

Dr. Hoskins: I move that we adopt the recommendation of the Executive Board with regard to North Dakota.

Dr. Kinsley: I second the motion.

(On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend that all of the list from the State of Ohio be approved.

(It was moved and seconded that the recommendation of the Executive Board with regard to the State of Ohio be adopted. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board also recommend that the list from Oklahoma, Oregon and Pennsylvania be elected members.

(It was moved and seconded that the recommendation of the Executive Board with regard to the State of Oklahoma, Oregon and Pennsylvania be elected members. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board also recommend that the list from South Carolina, South Dakota and Tennessee be elected to membership.

(It was moved and seconded that the recommendation of the Executive Board with regard to South Carolina, South Dakota and Tennessee be adopted. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board also recommend that the list from Texas be elected as members.

(It was moved and seconded that the recommendation of the Executive Board with regard to Texas be adopted. On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board also recommend that the list from Vermont be elected to membership.

Dr. Kinsley: I move that the recommendation of the Executive Board with regard to Vermont be adopted.

Dr. Hoskins: I second the motion.

(On vote, the motion was carried unanimously.)

Acting Secretary Day: The Executive Board recommend that the list from Virginia be elected to membership with the exception of William A. Carter, William B. Casilear, Robert P. Huffman, J. F. Kagey, Adrian A. Martin, H. E. Picknal and William G. Saunders.

Dr. Kinsley: I move that we adopt the recommendation of the Executive Board with regard to the State of Virginia.

(The motion was seconded by Dr. Mayo, and, on vote, was carried unanimously.)

Acting Secretary Day: I wish to state that in the case of H. E. Picknal that he did not state in what year he was a graduate of the United States College of Veterinary Surgery. If any of you happen to know him I should be very glad to have this information. The Executive Board recommend, or approve as members, all of the list from the State of Wisconsin.

A Member: The name of Samuel B. Patterson, of LaCrosse, I would like to have deferred.

Dr. Hoskins: I move that with that exception we approve the list.

(The motion was seconded by Dr. Kinsley, and, on motion, carried unanimously.)

Acting Secretary Day: The Executive Board recommend for membership all applicants on the lists from the Dominion of Canada and the Panama Canal Zone.

Dr. Kinsley: I move that we approve those lists.

(The motion was seconded by Dr. Hoskins, and, on motion, carried unanimously.)

Dr. Hoskins: It ought to be understood by members that with regard to any we may have passed over, to whom there might be objection, that name can be reconsidered at a subsequent meeting of the Association.

Dr. Lyman: I believe it is customary to elect these men by ballot. Inasmuch as these men have been passed upon and approved by the Executive Board I move that we dispense with the Rules and permit the Secretary to cast the ballot for their election.

(The above motion was seconded.)

President Torrance: It has been moved and seconded that the Rules be suspended and that the Secretary be instructed to cast the ballot for the applicants approved.

(On vote, the motion was carried unanimously.)

President Torrance: The Secretary is instructed to cast the ballot of the Association for the election of the applicants approved.

Acting Secretary Day: According to your motion I hereby cast the ballot of the Association for the election of all the applicants approved, according to the list that is lying before me.

President Torrance: The next order of business is the Secretary's report, and as he has left it upstairs and has to go for it we might pass on and take up the Treasurer's report. Is the Treasurer ready to report?

(No response from the Treasurer.)

Dr. Hoskins: I move that the Treasurer's report be carried over until another session.

(The motion was seconded, and, on vote, carried unanimously.)

President Torrance: Is it your pleasure to wait for the Secretary's report? He says he will be back in a minute.

Dr. Kinsley: Is there any other committee report ready?

President Torrance: Is there any committee report ready for presentation?

(No response.)

Dr. Hoskins: I move we adjourn.

Dr. Kinsley: I second that motion.

President Torrance: It has been moved and seconded that we adjourn. I would like to say here, although it is not the privilege of the Chairman to make speeches except in his Presidential Address, that I think it is advisable to transact as much business this morning as possible; and therefore I would suggest you wait for the Secretary's report.

Dr. Hoskins: I withdraw the motion, Mr. Chairman.

President Torrance: The motion to adjourn has been withdrawn, and therefore we will get on with a little more business.

(After waiting a short while and the Secretary not appearing, a new motion for adjournment was made and seconded and carried, the meeting adjourning at 12:35 p. m.)

SESSION OF TUESDAY MORNING, AUGUST 20, 1918.

The meeting was called to order by President Torrance at 10:10 a. m., as follows:

President Torrance: The first order of business is the report of the Secretary.

Acting Secretary Day: Before entering into the report I have an announcement to make in regard to the boat ride down the Delaware on Thursday afternoon. It will take place at three o'clock, and you will get your tickets in the office; the young lady will take care of you. This boat ride is free.

I also have a letter from your Secretary, Major Merillat, which I will read to the Association at this time:

"AMERICAN EXPEDITIONARY FORCES" HEADQUARTERS

FRANCO-AMERICAN VETERINARY LIAISON MISSION

A. I. O., 702.

Office of the Executive Officer,

July 19, 1918.

To the Officers and Members of the
American Veterinary Medical Association:

The matter of writing a letter to the officers and members of the Association for the 55th Annual Meeting has occurred to me long ago, but unfortunately my movements have forbidden until this late day when there is some doubt as to whether or not this message will be delivered in time. I am therefore addressing this to Treasurer Schneider to avoid any delay in transmission to the floor of the assembly.

It will be noted that these are the days of the great offensive when everyone in oversea service is bending every effort to do his full duty, and even if an inclination to write a message were not destroyed by the fury of the fray it is difficult to concentrate one's mind on any other matter than the events of the immediate moment and surroundings. Despite these obstacles, assure yourselves that the Secretary whom you honored last year by an unanimous re-election is with you today in spirit.

The writing of a letter of interest or of one which might serve any purpose other than that of a greeting would be strictly forbidden. I have already learned the danger of confiding even in one's best friend. We are at war with a crafty enemy which does not fail to profit by each bit of information that may thus be unconsciously made public. The members will therefore pardon this brief note. At some future time (and we all hope it is not far distant) it will be a great pleasure to relate our experiences, our trials and our tribulations.

I trust the Association will not recoil from the position it has taken in educational matters, but, on the contrary, will decide to take another substantial forward step. I am free to state, and I do so with great regret, that our greatest obstacles thus far in developing an efficient service, one that could take its place side by side with our Allies, arises directly from the motley educational system we have tolerated for so many years.

With the assurances of my profound appreciation for the honor you conferred upon me, I am,

Very sincerely yours,

L. A. MERILLAT, Secretary."

President Torrance: Does the Association wish to take any action with regard to this letter of Secretary Merillat's?

Dr. Mayo: Mr. President, I think it would be very fitting that a telegram of greeting be sent to Major Merillat, and I move, if it is possible, to send one. I don't know what the regulations are concerning the transmission of such a message, but I move that efforts be made to send him such a message.

(The motion was seconded by Dr. Kinsley.)

President Torrance: It is moved and seconded that a message of greeting be sent to Secretary Merillat, now Major Merillat.

Dr. Pierce: Give me an opportunity to say something about the other fellows over there. Why not put just one word about the others of our boys over there? They certainly deserve recognition.

President Torrance: Do you accept that amendment, Dr. Mayo?

Dr. Mayo: I certainly do.

(The amended motion was put to a vote, and carried unanimously.)

Dr. Dalrymple: I move that Major Merillat's letter be accepted and spread upon the Minutes.

(The motion was seconded by Dr. Pierce, and, on vote, carried unanimously.)

Acting Secretary Day: The Executive Board recommend that the President be authorized to appoint a committee to consider plans for a suitable memorial to the late Alexander F. Liautard.

Dr. W. Horace Hoskins: I move that the recommendation of the Executive Board be adopted.

Dr. Kinsley: I second the motion.

(The above motion, on vote, was carried unanimously.)

President Torrance: I don't feel I would like to appoint this committee off-hand, but would like to take a little time to think it over in order to get the best possible men on it. I will announce the composition of this committee at a future session.

Acting Secretary Day: There have been some applications from the University Department of the Philippines, and of course in order to accept those applications it will be necessary for the University to be put on the accredited list. Therefore, the Executive Board recommend that the Veterinary School connected with the University Department of the Philippines be put on the accredited list.

Dr. Hoskins: I move the recommendation of the Executive Board be adopted.

Dr. Mayo: I second the motion, and in doing so I wish to state that I have followed the development of this Veterinary School as closely as one could without being there, and I believe they are worthy of the recognition of this Association.

President Torrance: Are you ready for the question? All in favor of the adoption of this resolution signify by saying aye; contrary, no. The ayes have it and the motion is carried.

Acting Secretary Day: I believe that the next business is the election of members who have been passed upon by the Executive Board. I am very sorry we have not a list of these, such as we had yesterday, but they were received too late. I might say that all these applications have been received within the past week, and that this list you have was prepared a week ago yesterday, and of course we could not get these names in. I think it would be well for me to read some six or eight at a time, and then have you vote on them; and I will read six or eight more.

Dr. Hoskins: Why not read the entire list and then vote on them? If there are any objections we can vote on those.

President Torrance: If there is no objection to that line of procedure the Secretary will read all the names, giving time under each name to give a member the opportunity to object. If there is any objection, the member will rise and state it. At the end of the reading the list will be put to a vote.

John A. Elliott, Denver, Col., McKillip Veterinary College; Herman Busman, A. W. Swedberg.

Robert B. Leeper, Denver, Col., Kansas City Veterinary College, 1897; A. W. Swedberg, Herman Busman.

Howard W. Baylor, Camp Greenleaf, Ga., Cornell University, 1913; Wilfred J. Stakes, Otis A. Longley.

Daniel Milton Purdy, Camp Greenleaf, Ga., Kansas Agricultural College, 1917; Samuel Goss, Cecil Elder.

Grover C. Pieper, Granite City, Ill., Ind. Vet. College, 1917; E. L. Bertram, J. W. Joss.

Edward Anthony Benbrock, Ames, Iowa, U. of P., 1914; H. D. Bergman, H. S. Murphey.

Allen P. Buck, Boone, Iowa, Ohio State University, 1911; H. D. Bergman, H. S. Murphey.

John Harlan Byerley, Des Moines, Iowa, Indiana Veterinary College, 1917; J. S. Koen, Frank Jelen.

C. S. Cole, Ames, Iowa, Iowa State College, 1906; H. S. Murphey, H. D. Bergman.

Ed. S. Dunn, Mason City, Iowa, Chicago Veterinary College, 1913; J. S. Koen, Frank Jelen.

Willard D. Gilchrist, Cedar Rapids, Iowa, Iowa State College, 1905; Frank Jelen, J. W. Griffith.

Ralph B. Hunter, Castana, Iowa, Chicago Veterinary College, 1917; J. S. Koen, J. I. Gibson.

Geo. V. Jorgenson, Clermont, Iowa, McKillip Vet. College, 3 years; J. S. Koen, J. I. Gibson.

Louis W. Kellogg, Hull, Iowa, Chicago Veterinary College, 1917; W. H. Hurst, J. S. Koen.

Thomas J. McCabe, Williamsburg, Iowa, Chicago Veterinary College, 1918; J. S. Koen, Frank Jelen.

Carl Olsen, Sioux City, Iowa, Chicago Veterinary College, 1903; J. S. Koen, Frank Jelen.

H. W. Orr, Ames, Iowa, Iowa State College, 1918; H. D. Bergman, H. S. Murphey.

S. F. Rodibaugh, Cedar Rapids, Iowa, Indiana State Veterinary College; J. S. Koen, Frank Jelen.

A. J. Steiner, Ames, Iowa, Iowa State College, 1918; C. H. Stange, J. R. Mohler.

G. E. Van Tuyl, Paullina, Iowa, Chicago Veterinary College, 1917; W. H. Hurst, J. S. Koen.

L. B. Vermillion, Cedar Rapids, Iowa, Indiana Veterinary College, 1909; J. S. Koen, Frank Jelen.

Jesse Baker, Fort Kent, Me., U. S. College of Veterinary Surgeons, 1917; J. R. Mohler, C. M. Mansfield.

Hervey T. Potter, Calais, Me., N. Y. College of Veterinary Surgeons, 1892; H. P. Henderson, W. H. Robinson.

Lucien B. Ernest, Kensington, Md., U. S. College of Veterinary Surgeons, 1915; J. A. Kiernan, R. A. Ramsay.

Henry E. Brown, Springfield, Mass., Harvard, 1896; John D. DeRonde, T. J. Kean.

Israel Zimmerman, Springfield, Mass., Grand Rapids Veterinary College, 1906; John D. DeRonde, T. J. Kean.

John Elihu Zeltzer, Detroit, Mich., Michigan Agricultural College, 1917; Col. H. E. States, M. H. Mendenhall.

T. F. Arnold, St. Louis, Mo., Ontario Veterinary College, 1890; E. L. Bertram, J. W. Joss.

Robert R. Newman, Maplewood, Mo., Kansas City Veterinary College, 1908; E. L. Bertram, J. W. Joss.

Robert Y. Oosten, St. Louis, Mo., McKillip Veterinary College, 1916; E. L. Bertram, J. W. Joss.

Charles L. Sanders, St. Louis, Mo., Cincinnati Veterinary College, 1916; E. L. Bertram, J. W. Joss.

Harry S. Johnson, Central City, Neb., Kansas City Veterinary College, 1914; Edwin O. Odell, S. E. Casford.

Henry Henning, New York, N. Y., N. Y. College of Veterinary Surgeons, 1888; W. Horace Hoskins, F. Torrance.

Joseph Jacobs, New York, N. Y., N. Y. State Veterinary College, 1918; W. Horace Hoskins, F. Torrance.

Emil Pohl, Buffalo, N. Y., Ohio Veterinary College, 1891; C. R. Perkins, B. P. Wende.

Paul F. Brim, Philadelphia, Pa., McKillip Veterinary College, 1908; W. Horace Hoskins, J. W. Sallade.

Edward M. Curley, Tremont, Pa., U. of P., 1911; F. H. McCarty, J. W. Sallade.

Arthur Spitz, Philadelphia, Pa., U. of P., 1907; Elkan H. Yunker, C. S. Rockwell.

Dr. Hoskins: The names just read are recommended for membership. I move the recommendation be approved.

Dr. Mayo: Was the rule for vouchers for all of these applicants, in that they are required to have a voucher from the state which they come, carried out?

Acting Secretary Day: Yes, sir.

Dr. Mayo: I second the motion.

President Torrance: I think it necessary to couple with that motion a motion to suspend the rules.

Dr. Hoskins: I move to suspend the rules.

(The amended motion was seconded, and, on vote, carried unanimously.)

President Torrance: Gentlemen, the Secretary tells me he has some fifty more names of members to read. I don't know whether it is in order or not to read the names without giving the names of the men who would vouch for them, but, if so, it seems to me that it would save time.

Dr. Hoskins: Can't we just leave these names until the afternoon session?

President Torrance: I will entertain a motion to that effect.

Dr. Hoskins: I move that we postpone the reading of the names of these additional applicants until the opening of the session this afternoon.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: I would like, before the close of the meeting this morning, to make this announcement: I have some applications here from Kentucky, and if there is anyone that might know these applicants I should be glad to have you vouch for them. The applicants are Fred W. Bratton, George S. Place and John R. Edwards. They are from Kentucky. I have a few more that are not well vouched for, and these gentlemen are from New York: Morris A. Quinn and Raymond Winters. If there is anyone who knows those gentlemen and can vouch for them, I would like for you to come up on the platform right away, and see if we can't get them properly vouched for.

President Torrance: To prevent any misapprehension about the new members elected at this meeting, I would like to say that every member elected at this meeting has the same right to vote for the election of officers as any other member. It does not matter about his election taking place at this time; he has the right to vote at the election. This afternoon, at the afternoon session, we will commence by taking up the list of names that has not yet been voted upon, and we will put those through; and those members will also have the right to vote at this election.

Dr. W. H. Hoskins: I move that when we adjourn we adjourn to meet at two o'clock, and that this work of the few applications will commence promptly at that hour.

President Torrance: I understand that the program this afternoon begins with two papers. Is it your intention to proceed with the applications before the papers?

Dr. Hoskins: Yes, because there is considerable work in committees.

(The motion was seconded.)

President Torrance: It has been moved and seconded that in this afternoon's session we have first the applications and then proceed with the regular order of business, the receiving of reports. This will take priority over the reading of papers.

A Member: Is this question open to discussion?

President Torrance: I did not know there would be any discussion on it. A vote of adjournment is not subject to discussion. It may be voted down, but is not subject to amendment.

(The motion was put to a vote and carried unanimously.)

AFTERNOON SESSION, TUESDAY, AUGUST 20, 1918.

The meeting was called to order by President Torrance at 2:15 p. m.

It was moved by Dr. Cassius Way that the resolution passed at the morning session, to change the program and proceed with the election of new members first at this afternoon's session, be reconsidered.

(The motion was seconded, and after some discussion by Drs. Hoskins, Williams and others the motion was carried to proceed with the program as printed.)

President Torrance: We will now listen to a paper by Dr. Veranus A. Moore, of New York State Veterinary College, on "The Veterinary Practitioner and the Control of Infectious Diseases." (See December Journal.)

President Torrance: Before proceeding to the next item on the program I would ask that the meeting give an opportunity to Dr. Eagle to make a statement.

Dr. R. F. Eagle: Mr. President and gentlemen: Since this Convention has been here assembled you have had the opportunity of listening to many addresses, classic in some respects, and I don't feel competent to review the progress of veterinary science. I am here for another purpose. But, in order not to encroach upon an already crowded program, I am going to get to the little statement I am going to make immediately. (See January Journal.)

Dr. Eagle: Just before leaving Chicago, Mr. Ogilvie informed me that Canada is contributing an oil painting of Dr. J. G. Rutherford. (Applause.)

Dr. W. H. Hoskins: The presentation of these three portraits of honored members of our profession is of particular interest to the practitioners of America; and in order to carry out the intention of the Committee I move that these pictures be turned over to the Executive Board with the view of seeing that they are placed in the Saddle and Sirloin Club of Chicago, with an expression of our appreciation for this recognition they have given these distinguished members that we have mingled with so many years.

Dr. Mayo: In seconding that motion I would also like to include that we extend to Mr. Thomas E. Wilson our sincere thanks for his generous contribution to this valuable object, and also to the Saddle and Sirloin Club for the opportunity not only to establish this gallery but for the opportunity they have extended to us to place these distinguished faces of our veterinarians there.

Dr. Bennett: I would like to suggest that the portraits be presented to the Saddle and Sirloin Club of Chicago during the Stock Show around the first of December. Many of the veterinarians here will be there. A great many of the prominent leaders in veterinary medicine of this country will be there, and also of Canada; and I would suggest that the presentation be made to the Saddle and Sirloin Club at that time.

President Torrance: Would Dr. Hoskins be willing to have that included in the original motion?

(Dr. Hoskins accepts the amendment.)

Dr. Torrance: It has been moved and seconded that these pictures be turned over to the Executive Board with the view of seeing that they are placed in the Saddle and Sirloin Club of Chicago, with an expression of our appreciation of this recognition they have given these distinguished members we have mingled with so many years; and that we extend to Mr. Thomas E. Wilson our sincere thanks for his generous contribution to this valuable object, and that our thanks be extended to those other gentlemen who have contributed in no small measure to the carrying out of this estimable object.

(On vote the motion was passed unanimously.)

President Torrance: I have a further announcement to make. Arrangements have been made for a competent man to accompany the party on the boat trip on Thursday afternoon, to indicate and explain the points of interest along the Delaware River. To derive the full benefit of this man's knowledge the party should be kept together in some one section of the boat. This can be accomplished, the officials of the boat line tell us, if the members of the party assemble here at 2:30 p. m. at the latest.

This will make it possible to visit the Mulford laboratories at Glenolden the same afternoon. All who desire to visit these laboratories at some earlier time should make arrangements to do so by applying at the Mulford exhibit in the Clover room; and a guide will be provided. Tickets for the boat ride are being distributed at the Bureau of In-

formation desk free of charge. Boats leave at the Chestnut street wharf. Remember to be there before 2:30 Thursday afternoon.

The Banquet Committee also asked me to add to what I have said that banquet tickets must be purchased as early as possible so that reservation may be made by the hotel management for all who attend.

The next business on our program is a paper by J. J. Ferguson of Chicago on "The Live Stock Industry, Present and Prospective." I have much pleasure in calling upon Mr. Ferguson. (Applause.)

Mr. J. J. Ferguson: This is not a very good time to talk. A man said to me this morning, "Why aren't you fighting? Every man who looks as able-bodied as you should be over there giving the Huns hell," so I don't think it a good time to inflict much of a talk on you.

In order to save valuable time I thought it well to put in the form of a small folder the information and data which I thought it might be well to put before you.

Gentlemen of this Association, your work is so vitally connected with the success in every way of the live stock industry that we regard you as fundamental, and it was with great pleasure indeed that our people were advised that I was invited to come here and appear before you. I will just run over a few of the facts I have jotted down, and which I have had printed here so you may have them before you and may read them at your leisure. (See October Journal.)

President Torrance: I have been asked to announce that the Cornell Alumni will hold a meeting and dinner in the Pink room at 6:30 p. m.

This paper by Mr. Ferguson is now open for discussion.

A Member: May I ask that Mr. Ferguson's paper be published at the earliest possible time in the Journal, so that the figures he has in it will be at our disposal while they are fresh?

President Torrance: I understand that Mr. Ferguson has provided a number of these pamphlets, which will be distributed to each member of the Association.

President Torrance: If you have no further comment on this valuable paper, we will pass on to the regular order of business, taking up the business where we left off—the presentation of the names recorded by the Executive Board. I will call upon the Secretary to read the names of these prospective members.

Acting Secretary Day: First, I would like action to be taken on the names from the Philippine Islands, read this morning.

Dr. W. H. Hoskins: I move that we suspend the rules and elect the four members from the Philippine Islands.

(The motion was seconded, and, on vote, carried unanimously.)

Acting Secretary Day: Also, Lieut. Bratton, of New York.

Dr. Lowe: I move that this name take the same course as the preceding names.

Major Cotton: Associated with the name of Lieut. Bratton there were also this morning the two other names I remember in particular, and also other names of veterinary officers in the United States army who have failed to get the endorsement of some member of this Association from the States from which they originate. As I understand, all these men have been recommended by the veterinary instructors in

the school of the United States army. I remember particularly that associated with Lieut. Bratton's name was the name of Lieut. Place, and another. These are men I have known all winter, and it seems an outrage against those who have been in the veterinary training schools that simply because they failed to get the endorsement of men from their own states they should be excluded at this time. This is a military exigency, and I therefore move that the by-laws be suspended and that those members vouched for by members of this Association—even though they failed to get vouchers from their own State—be elected to membership, those in military service particularly.

Dr. Lowe: In view of the military exigency, I take pleasure in seconding the motion of Major Cotton.

President Torrance: You have heard the motion that the by-laws be suspended, and that those names held up by the Executive Board because of being not vouched for by members from their own state, be passed.

Major Cotton: And also other military officers who are also members of this Association, as well as instructors. Perhaps there are some who have been vouched for. Some, like Lieut. Bratton, are of West Point, Kentucky. In other words, some of these men have been vouched for by other veterinary officers besides instructors.

President Torrance: And that those names be passed in cases where the men have been vouched for by veterinarians other than veterinary instructors.

Major Cotton: But who are members.

(On vote the motion was carried unanimously.)

Acting Secretary Day: There are a few names I did not read this morning. They are as follows:

Fred C. Frye, St. Joseph, Mo., K. C. V. C., 1914; J. A. Zimmerman and A. O. Lundell.

Chas. H. Gruncald, St. Joseph, Mo., St. Jo, 1915; J. A. Zimmerman and A. O. Lundell.

Elwood B. Bunting, St. Joseph, Mo., St. Jo, 1891; H. J. Hoyman and A. O. Lundell.

G. P. Everly, St. Joseph, Mo., K. C. V. C., 1911; A. O. Lundell and W. A. Davidson.

E. A. Kellogg, St. Joseph, Mo., K. C. V. C., 1915; A. T. Kinsley and S. L. Stewart.

Lee I. Walch, St. Joseph, Mo., St. Jo, 1817; R. C. Moore and E. A. Logan.

John B. Wright, St. Joseph, Mo., K. C. V. C., 1897; Hy. J. Hoyman and Chas. I. Walch.

Frank A. Spellman, St. Joseph, Mo., St. Jo, 1917; J. A. Zimmerman and C. O. Walch.

Wm. A. Barr, St. Joseph, Mo., K. C. V. C., 1910; Chas. O. Walch and H. J. Hoyman.

C. J. Mutziger, St. Joseph, Mo., K. C. V. C., 1905; A. O. Lundell and W. A. Davidson.

H. R. Colliers, St. Joseph, Mo., K. C. V. C., 1906; A. O. Lundell and W. A. Davidson.

H. P. Brown, St. Joseph, Mo., K. C. V. C., 1918; H. J. Hoyman and A. O. Lundell.

C. B. Griffith, Baileyville, Kan., Kansas State, 1918; H. J. Hoyman and A. O. Lundell.

E. H. Haynie, St. Joseph, Mo., St. Jo, 1918; A. J. Zimmerman and A. O. Lundell.

R. L. Brinkman, Cairo, Ga., Cincinnati, 1917; Wm. M. McKellar and Louis P. Cook.

E. A. Birmingham, Bridgeport, Conn., N. Y. A. V. C., 1905; Albert C. Knapp and Robert D. Martin.

Chas. H. Honeywell, Manhattan, Kan., Kansas State, 1918; G. E. Maxwell and A. T. Kinsley.

C. H. Danes, Kansas City, Kan., K. C. V. C., 1898; G. E. Maxwell and A. T. Kinsley.

F. C. Pryor, Wewoka, Okla., McKillip, 1918; Willis F. Hall and F. F. Meads.

Jas. N. Eagle, Clark, S. D., K. C. V. C., 1910; S. W. Allen, G. G. Graham and H. Jensen.

N. V. Boyce, Kansas City, Kan., K. C. V. C., 1899; A. T. Kinsley and C. O. Kroner.

Arthur C. Stever, Jacksonville, Fla., U. S. C. V. S., 1907; E. M. Nighbert and Thos. J. Mahaffy.

H. E. Curry, Kansas City, Mo., K. C. V. C., 1908; A. T. Kinsley and G. E. Maxwell.

(President Torrance calls Fifth Vice President S. H. Ward to the Chair.)

The Chairman: Gentlemen, you have heard the reading of the names by the Secretary. What is your pleasure?

Dr. W. H. Hoskins: I move that the recommendation of the Executive Board be approved under suspension of the rules, as was done this morning.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: I have, also, the following names:

W. J. Deegan, Camden, N. J., U. of P., 1911; W. H. Lowe and C. M. Hoskins.

Frederick B. Miller, Brooklyn, Pa., Ontario, 1910; E. H. Yonker and F. H. McCarthy.

J. P. O'Leary, Ridley Park, Pa., Harvard, 1895; C. S. Rockwell and E. H. Yonkers.

Edw. C. Joss, Portland, Ore., C. V. C., 1902; W. H. Lytle and B. T. Simms.

J. W. Richardson, Chickamauga Park, Ga., M. C. K., 1910; W. J. Stokes and O. A. Longley.

R. E. Duckworth, Chickamauga Park, Ga., San Francisco, 1915; W. J. Stokes and O. A. Longley.

E. B. Cockerton, Chickamauga Park, Ga., San Francisco, 1911; W. J. Stokes and O. A. Longley.

Jos. H. Kitzhofer, Chickamauga Park, Ga., O. S. U., 1910; W. J. Stokes, O. A. Longley and C. E. Cotton.

W. M. Kyle, Chickamauga Park, Ga., C. V. C., 1915; W. J. Stokes, O. A. Longley, N. E. Northrup.

H. F. Cook, Chickamauga Park, Ga., C. V. C., 1908; W. J. Stokes, O. A. Longley and E. L. Quitman.

H. J. Stafseth, Camp Custer, Mich., Michigan Agricultural College, 1917; G. W. Dunphy and S. Brenton.

R. B. Rath, Camp Custer, Mich., Grand Rapids, 1912; G. W. Dunphy and C. E. Cotton.

W. H. Seute, Chickamauga Park, Ga., K. C. V. C., 1910; W. J. Stokes and O. A. Longley.

E. N. Nettleton, Chickamauga Park, Ga., C. V. C., 1895; W. J. Stokes, O. A. Longley, N. E. Northrup.

W. E. Popelors, Chickamauga Park, Ga., C. V. C., 1915; W. J. Stokes, O. A. Longley and S. J. Walkley.

E. E. Chase, Chickamauga Park, Ga., Ontario, 1905; W. J. Stokes, O. A. Longley and S. J. Walkley.

M. J. Luster, Chickamauga Park, Ga., K. C. V. C., 1917; W. J. Stokes, O. A. Longley and E. W. Ranck.

H. L. Farr, Chickamauga Park, Ga., A. P. I., 1917; W. J. Stokes, O. A. Longley and R. W. Gow.

Charles Eastman, Chickamauga Park, Ga., K. C. V. C., 1904; W. J. Stokes, O. A. Longley and A. T. Kinsley.

Jas. B. Boazman, Chickamauga Park, Ga., K. C. V. C., 1902; W. J. Stokes, O. A. Longley and A. T. Kinsley.

C. H. Young, Chickamauga Park, Ga., K. C. V. C., 1912; W. J. Stokes, O. A. Longley and A. T. Kinsley.

G. B. Jones, Chickamauga Park, Ga., K. C. V. C., 1916; W. T. Stokes, O. A. Longley and A. T. Kinsley.

W. B. Boulton, Chickamauga Park, Ga., St. Jo, 1917; W. T. Stokes, O. A. Longley and A. T. Kinsley.

J. W. Benner, Chickamauga Park, Ga., Kansas State, 1911; W. T. Stokes, O. A. Longley, A. T. Kinsley and G. W. Goss.

Connie McMiller, Chickamauga Park, Ga., K. C. V. C., 1916; W. T. Stokes, O. A. Longley and E. M. Ranck.

R. C. Gulder, Chickamauga Park, Ga., St. Jo, 1910; W. T. Stokes, O. A. Longley and A. T. Kinsley.

C. C. Palmer, Chickamauga Park, Ga., Ohio State, 1912; W. T. Stokes, O. A. Longley and A. S. Cooley.

H. N. Beeman, Chickamauga Park, Ga., O. S. U., 1913; W. J. Stokes, O. A. Longley and A. S. Cooley.

J. K. Northway, Chickamauga Park, Ga., K. C. V. C., 1917; W. J. Stokes, O. A. Longley and H. L. Darby.

L. C. Crow, Chickamauga Park, Ga., K. C. V. C., 1915; W. J. Stokes, O. A. Longley and A. T. Kinsley.

W. A. Geick, Chickamauga Park, Ga., St. Jo, 1915; W. J. Stokes, O. A. Longley and R. Arbiter.

E. B. Jordan, Purviss, Miss., K. C. V. S., 1915; Geo. W. Constable and E. M. Ranck.

The Chairman: Gentlemen, you have heard the reading of the names by the Secretary. What is your pleasure?

Dr. Lowe: I move that the same course be pursued in regard to the names of these gentlemen as was pursued with the preceding batch.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

Acting Secretary Day: I have also the following:

J. F. Ryder, Boston, Mass., Amr. Vet., 1883; H. K. Copethorn and L. H. Howard.

C. C. Neal, Glenolden, Pa., U. of P., 1916; C. M. Hoskins and C. S. Rockwell.

Theo. Schondeau, Washington, D. C., U. S. C. of V. S., 1910; J. R. Mohler and W. H. Hoskins.

Jas. W. Crouse, Camp Dix, N. J., U. of P., 1915; W. H. Hoskins and J. R. Mohler.

W. T. Conway, West Haven, Conn., Harvard, 1891; H. Whitney and S. A. Selby.

F. H. Hassenvilles, Davenport, Iowa, C. V. C., 1905; Peter A. Franxmann and A. A. Swain.

J. A. Dragoo, Connersville, Ind., C. V. C., 1908; W. B. Craig and L. E. Northrup.

M. H. Clark, Seymour, Ind., Ind. Vet., 1916; C. H. Hays, J. E. Gibson and L. E. Northrup.

R. E. Wood, Rockville, Ind., Ind. Vet., 1910; C. H. Hayes, R. H. Boyd and L. E. Northrup.

G. F. Campbell, Camp Mead, Md., U. S. V. C., 1910; J. P. Turner and Lieut. Hardenberg.

B. Mann, Camp Mead, Md., U. of P., 1917; W. J. Lentz and J. W. Adams.

R. A. Runnels, Camp Mead, Md., Mich. Ag., 1916; G. W. Dunphy and W. Giltner.

G. E. M. Smallbone, Camp Mead, Md., C. V. C., 1912; E. Odell and Dr. Bell of St. Paul, Neb.

John W. Claris, Buffalo, N. Y., Cornell, 1917; C. E. Cotton, F. H. Mackie and W. H. Hoskins.

I. H. Halkin, New York City, N. Y., N. Y. S. V., 1918; W. H. Hoskins and Harry D. Gill.

B. M. Lyon, Pearl River, N. Y., U. of P., 1915; A. Eichhorn and T. E. Isacsen.

W. E. Muldoon, Camp Lee, Va., Cornell N. Y. S., 1913; Frank H. Mackie, C. M. Haring and W. H. Hoskins.

J. R. Porteus, New York City, N. Y. S. V., 1918; W. H. Hoskins and J. R. Mohler.

Henry Schaffer, New York City, N. Y. S., 1918; W. H. Hoskins and Henry D. Gill.

Orion L. Summer, Upper Sandusky, Ohio, Ohio State University; G. W. Cliffe and F. E. Anderson.

Robert Porteus, Camp Gordon, Ga., Ohio State University; A. H. Legenhausen and S. Sisson.

F. B. Mayer, Canton, Pa., McKillip V. C., 1911; C. J. Marshall and W. E. Wight.

Henry R. McNally, St. Joseph, Mo., K. C. V. C., 1902; R. Graham and R. C. Moore.

Jas. Dwight Pierce, Springfield, Mass., C. V. C., 1918; W. J. Hennessey and B. D. Pierce.

Paul A. Johnson, Little Rock, Ark., Ohio State, 1908; R. M. Gow and C. O. Kromer.

Jas. H. Murphey, Sullivan, Ind., T. H. V. C., 1915; L. E. Olson and R. H. Boyd.

Herman V. Persells, Muncie, Ind., K. C. V. C., 1912; L. E. Olson, C. H. H. Dixon and L. T. Northrup.

C. F. Harrington, Denver, Col., C. V. C., 1911; C. G. Lamb and I. E. Newcom.

E. W. Price, Dunmore, W. Va., G. W. Univ., 1918; S. E. Hershey and C. O. Kromer.

A. F. Cassell, Beverly, Kan., Kansas State Agricultural College, 1907; G. Gross and G. M. Potter.

G. W. Riley, New Hope, Pa., U. of Pa., 1912; H. W. Turner and W. H. Ridge.

2nd Lieut. J. W. Boylston, Springfield, S. C., A. P. I., 1916; H. D. Martin and R. N. Gow.

1st Lieut. C. J. Griffin, Camp Jackson, Ohio State, 1913; H. D. Martin and W. A. Oxby.

2nd Lieut. W. D. McCormack, Camp Jackson, A. P. T., 1914; H. D. Martin and R. N. Gow.

2nd Lieut. L. J. Hogan, Camp Jackson, McK. V. C., 1911; H. D. Martin and Wm. Baylor.

H. N. Hill, Boston, Mass., Harvard, 1896; H. K. Copethorn and J. D. DeRonde.

A. C. Fitzpatrick, Cambridge, Mass., Harvard, 1900; H. K. Copethorn and L. H. Howard.

Geo. E. Fetter, Watertown, Mass., Harvard, 1896; H. K. Copethorn and L. H. Howard.

J. F. Arnold, Camp Merritt, N. J., Cornell U., 1916; H. K. Copethorn and J. D. DeRonde.

Andrew Hyde, Philadelphia, Pa., A. Ct. C., 1887; H. K. Copethorn and L. H. Howard.

E. A. Crossman, Needham, Mass., Harvard, 1891; H. K. Copethorn and L. H. Howard.

J. J. Smart, Somerville, Mass., O. V. C., 1897; H. K. Copethorn and L. H. Howard.

R. O. Brock, Watertown, Mass., N. Y. Am., 1905; H. K. Copethorn and L. H. Howard.

Chas. L. Kronfeld, Hartford, Conn., C. V. C., 1917; H. K. Copethorn and L. H. Howard.

Jno. J. Ash, Somerville, Mass., Ohio State University, 1917; H. K. Copethorn and L. H. Howard.

K. C. Cherrington, Pawtucket, R. I., Harvard, 1900; H. K. Copethorn and J. T. Pollard.

E. F. Schofield, Greenwich, Conn., O. V. C., 1906; C. L. Colton and M. T. Knapp.

R. E. Hittle, Bloomington, Ill., K. C. V. C., 1915; D. M. Campbell and A. Eichhorn.

2nd Lieut. J. A. Finn, Camp Jackson, C. W. C., 1917; H. D. Martin and E. L. Quitman.

2nd Lieut. Walter E. Fritz, Columbia, S. C., Cornell, 1911; H. D. Martin and A. Eichhorn.

2nd Lieut. J. M. Herron, Camp Jackson, U. of P., 1914; H. D. Martin and W. H. Lowe.

Walter H. Yingst, Harrisburg, Pa., N. Y. C. V.; W. C. Siegmund and J. A. McConeghy.

Nathan K. Fegley, Emans, Pa., Nat. V. C., 1885; C. S. Rockwell and T. E. Munce.

Dee Lloyd Allen, Auburn, Ala., A. P. Inst., 1917; J. S. McAdonz and C. A. Cary.

H. B. Leonard, Albany, N. Y., Cincinnati College, 1905; J. G. Wills and J. A. Kiernan.

Jacob W. Vance, Columbus, Ohio, Cincinnati V. C., 1912; W. A. Axby and C. O. Kromer.

C. A. Trapkey, Camp Mead, Md., G. R. M., 1913; W. A. Axby and C. O. Kromer.

F. R. Ewing, Camp Pike, Ark., Ont. V. C., 1914; L. E. Day, O. E. Barker and R. M. Gow.

H. F. Peters, Ashville, Ohio, McK. V. C., 1910; Chas. Frazier and H. D. Sheeran.

C. H. York, Columbus, Ohio, K. C. V. C., 1911; H. D. Sheeran and A. S. Cooley.

M. K. Mann, Bloomsburg, N. J., U. of P., 1916; J. H. McNeil and H. B. Cox.

W. Grimes, Hawthorn, N. J., N. Y. C. of V., 1899; T. Booth and J. MacFadden.

E. M. Alderich, Grove City, Pa., U. of P., 1913; P. E. Quinn and H. W. Turner.

W. L. Herbert, Bloomsburg, Pa., U. of P., 1904; C. J. Marshall and D. W. Gilliland.

M. W. Neidigh, State College, Pa., O. S. U., 1917; D. S. White and O. V. Brumley.

G. K. Swank, Revere, Pa., U. of P., 1904; P. E. Quinn and H. W. Turner.

Thomas White, Philadelphia, Pa., U. of P., 1900; C. A. Schaufler and C. S. Rockwell.

W. J. Brown, McKilip, 1910; C. M. Haring and F. H. Mackie.

L. C. Drum, Menomonie, Wis., C. V. C., 1910; J. T. Purcell and W. A. Wolcott.

Elmer T. Haven, Jacksonville, Fla., K. C. V. C., 1908; E. M. Nighbert, T. J. Mahaffy and A. T. Kinsley.

Richard J. Lukey, Eau Claire, Wis., C. V. C., 1913; J. T. Purcell and W. A. Wolcott.

C. C. Conley, Burlington, Vt., K. C. V. C., 1905; T. J. Kean, J. D. DeRonde and A. T. Kinsley.

Ira H. Arnold, Rosslyn, Va., U. S. C. V. S., 1917; H. H. Young and H. S. Gamble.

Dr. W. H. Hoskins: I move that the gentlemen whose names have just been read be elected, under suspension of the rules.

The President: With the consent of Dr. Hoskins I would like to include the name of Major Edwards, whose name requires one more voucher.

Dr. Hoskins: I move it be included in the list.

(The motion was seconded and, on vote, carried unanimously.)

A Member: I move you that the Secretary be instructed to cast one ballot for the names that have been read.

(The motion was seconded, and, on vote, carried unanimously.)

Dr. Kinsley: Is there not another list of fifteen or some such that was included in Major Cotton's motion, and that should be read prior to that?

President Torrance: I don't know. I will ask the Secretary. Are there any more names, Mr. Secretary?

Acting Secretary Day: Yes, I will pick them out.

President Torrance: And we will include them in the motion. It is understood that this motion will include those men who under a previous motion were included with the vouching of military officers, even though not from the States of which the applicants were residents.

Acting Secretary Day: According to the motion, I hereby cast the ballot of the Association for all the members whose names have been read.

President Torrance: The next order of business is the presentation of the report of the Secretary.

Acting Secretary Day: (See November Journal.)

President Torrance: You have heard the Secretary's report. What is your pleasure?

Dr. W. H. Hoskins: I move it be received and filed.

(The motion was seconded, and, on vote, carried unanimously.)

Dr. Hoskins: I move that further consideration of the report be deferred until the next regular session of the meeting of the Association.

(The motion was seconded, and, on vote, carried unanimously.)

President Torrance: That brings us now to the election of officers as our next order of business. The first officer to be elected is the President. We are now ready to receive nominations for President.

Dr. Moore: I have in mind a gentleman who has been a faithful member of this Association for many years, a man who has seldom been absent from the meetings, who is from a section of this country that has been rather overlooked for a number of years: Dr. C. A. Cary of Alabama.

Dr. Hoskins: I would like to second the nomination of Dr. Cary for the office of President. I recall that in 1890 this Association for the first time in its history held a meeting west of the Allegheny Mountains, and held it in the city of Chicago; and one of the three men who met us there at that time, and we went from the east in a goodly number, in proportion to our membership, was Dr. C. A. Cary. He has continued his membership from that day until this, and his membership now reaches over about thirty years. I can recall no meetings during that

period of time at which Dr. Cary was not present. He has been a very active worker in the Association. We have never assigned to him a duty of any kind, no matter how slight it seemed, that he did not make an effort to perform it better than his predecessor. The annals and records of this Association will show many contributions of great value to this Association and of great value to the profession. He was for a long time a practitioner of veterinary medicine, and for many years a member of the teaching staff in several places throughout our country—at present at one of our schools in the South. There he is doing a vast work in connection with that school; and from what we have heard of the vast possibilities in the South in opening up a field to relieve the animal shortage, he has a great opportunity before him; and I hope he will receive this honor, of being elected President, especially as we may go to the South in 1919, and aid our brethren in the South in helping to open up that part of our territory. (Applause.)

Dr. Bennett: I have been a member of this Association for the past quarter of a century, and there has been impressed upon me very forcibly the great progress the veterinary profession has made during the time I have been a member of the Association. I have seen members come and go; I have seen officers come and go; and it seems to me every year we improve our conditions. The veterinary profession has advanced always, and it is advancing today; and I am glad to say I am a member of this Association, and I would like to see someone at the head of this Association who is a man that has always stood for the advancement of higher education in every way. Therefore, I take great pleasure in presenting the name of Dr. V. A. Moore, and I trust the members of this Association will see fit to honor him with their votes today. (Applause.)

Dr. Kinsley: I realize the fact that I am one of the younger members of the Association. I have been privileged to sit in many committee meetings, and I want to heartily second the nomination of Dr. V. A. Moore, whom I have seen in committee work year after year, and who has served this Association in practically all capacities except that of President. I am satisfied that we will appreciate what Dr. V. A. Moore will do for this Association if elected President. I hope you will support him. (Applause.)

Dr. Stange: To those of us who are carrying the responsibility of training men who will enter this profession, only to those, perhaps, can you look for leadership; and among those you look for leadership in is V. A. Moore. I don't believe many of you, except those connected with the colleges, appreciate how much good counsel he has given us and how much he has helped us to turn out men that will be a credit to this or any other profession. I want to heartily endorse the nomination of Dr. Moore. (Applause.)

President Torrance: Are there any other nominations? If not, a ballot will be taken on these two names: C. A. Cary, of Alabama, and Veranus A. Moore, of Ithaca, N. Y. I will appoint as tellers Dr. Cooley and Dr. Hilton and Dr. Hernsheim. Now, everyone who has been elected to membership at this meeting is competent to vote, but only members are competent to vote, and we trust that visitors will refrain from attempting to cast a ballot.

President Torrance: While the tellers are counting the votes we can proceed to other business.

The University of Pennsylvania Alumni will meet tonight at the Bellevue-Stratford. Dinner will be served—it does not say where, except it is in the hotel.

The New York Alumni will meet at 8 o'clock in the Pink room.

We will now receive nominations for the office of Vice Presidents. There are five to be elected.

(The following nominations were made for the Vice Presidencies: O. H. Eliason, of Wisconsin; George H. Hart, of California; Thomas E. Smith, of New Jersey; J. B. Hollingsworth, of Canada; I. E. Newsom, of Colorado; Adolph Eichhorn, of New York; H. B. Cox, of Philadelphia; L. E. Northrup, of Indiana; H. S. Murphey, of Ames, Iowa; and R. P. Marsteller, of Texas.)

(The name of W. H. Dalrymple, of Louisiana, was presented. As to the nomination of Dr. Dalrymple as Vice President, President Torrance spoke as follows:

President Torrance: I might point out that Dr. Dalrymple has occupied the Presidential chair, and it is not customary to elect to the Vice Presidency a man who has been President of the Association.

If there are no further nominations the ballots will be cast, and I will appoint Dr. Fitch, Dr. Ranck and Dr. Pierce to act as tellers.

The McGill graduates will meet in the Blue room at 8 o'clock.

President Torrance: I have received two telegrams, one from Dr. Schwarzkopf, which read as follows:

"FS. St. Paul, Minn. 19. Secretary American Veterinary Medical Association, Bellevue-Stratford Hotel. Philadelphia, Pa. Best wishes for profitable meeting. Recommend action be taken relative to our professional assistants in protection and conservation of the horse power of the country while this question is pressing on account of war condition it also forms an essential part of veterinary ethics. Let us join therefore in the humane endeavor of the American Red Star Animal Relief and assist this organization morally and financially for this purpose. I pledge ten dollars if ninety-nine other members contribute a like amount.

Olaf Schwarzkopf, Major Veterinary Corps."

President Torrance: The second telegram is from Col. Morse, and reads as follows:

"WA. Washington, D. C., 12:38 p. m. 20. Dr. F. Torrance, President American Veterinary Medical Association, Bellevue-Stratford Hotel, Philadelphia, Pa. Regret my inability to accept your kind invitation. Best wishes for successful meeting. Colonel Morse."

President Torrance: Now, the tellers may retire and count the ballots, and while they are doing so I will entertain a motion that we proceed with the election of Secretary.

Dr. W. H. Hoskins: I move that we proceed with the election of Secretary.

(Motion seconded, and, on vote, carried unanimously.)

Dr. W. H. Hoskins: I desire to place the name, for the nomination of Secretary, of one who does not need me to say anything for him. His first year was the most remarkable year in the history of this Association. He is filled with energy and zeal and set himself to the task of making this Association stronger and more powerful in every way. In one short year he placed on the roll of membership of this Association some five hundred and forty-three members. Just subsequent to that he was one of the first of our number to seek and pledge himself for the support of his country, of your and my country. Dr. L. A. Merillat, as our Secretary, filled a remarkable year during the period of his activity. He was called into the service, to which he promptly responded, and was very quickly sent abroad, where his services seemed to be more largely needed. He was taken away from us, but in accordance with that rule which we adopted when this country entered war, that we would share the work and labors of anyone who might be called into the service, it was necessary to take a fifty-fifty share of the service and work. We would do that, and if it were necessary to do all of the work we were prepared to do that. He has been away during the year, yet there has been such a loyal devotion to the Association's services by those to whom he has entrusted its care during his absence, and by others sharing the work which would have fallen to his lot during the year, we are met here with one of the best programs in the history of the Association; and this meeting will go down in the records of the American Veterinary Medical Association probably never equalled again in the large addition to the membership, more than one thousand. It would seem very fitting under the circumstances to continue him in his office, to share the work for another year.

Dr. Lowe: It affords me delight, great delight, to second the nomination of Major L. A. Merillat; and while I realize, Sir, and fellow colleagues, that it is proper for us to make as many nominations as we like for one particular office, it would, at the same time, be a very fitting tribute to our distinguished brother, Major Merillat, in France, if we made no other nomination, and made his nomination unanimous; and I hope this thought of mine will meet with approval, and that no one is nominated against Dr. Merrilat, and that his nomination may be made unanimous.

Dr. Dunphy: I don't agree with my friend, the late speaker, whom I am intimately acquainted with. I believe competition is the life of trade. I want to suggest the name of a man for Secretary who needs no introduction to this Association. You all know his record. He took this Association when it was small in number and heavily in debt, and he was Secretary of this Association for five years; and he left with the number of members of the Association doubled and the Association out of debt, in fact, with a surplus on hand. I wish to present the name of Dr. R. P. Lyman.

Dr. Way: Gentlemen, may I place the name, for Secretary, before you of a man who needs no introduction, a man who has served as Secretary of this Association on previous occasions, a man whose ability, whose energy, whose integrity is beyond question. He has been a man

who championed the cause of higher education and better things for this Association and for our profession. We all love to honor, we all respect, and we all appreciate the service that the men in the army are doing; but at the same time it seems fitting, when so many problems confront us, that we should have a man located here who is on the job, and whose ability is beyond question. Dr. Mayo has recently contributed to the service of his country one of his sons; and it is with pleasure I present the name of Dr. Nelson S. Mayo.

Dr. Ward: I wish to second Dr. Mayo's nomination, and want to say that I do so for the reason that Mr. Merrilat is three thousand miles from here, and I think it would be a shame to put upon him the responsibilities which he is unable now to assume. I am satisfied the Association will later, after the war, show our appreciation of his work.

Dr. Lang: I wish to second the nomination of Dr. Lyman, of Detroit.

A Member: I move the nominations be closed.

President Torrance: A ballot will be held upon the three names submitted: L. A. Merrilat, R. P. Lyman and N. S. Mayo; and I will appoint as tellers Dr. Kinsley, Dr. Murphey and Dr. Connaway.

President Torrance: I have to announce at this time the result of the ballot for President. The tellers report that there were two hundred and eighty-four votes cast, of which one hundred and eighty-four were cast for Dr. Moore, and one hundred for Dr. Cary.

Dr. Cary: I want to move that this election be made unanimous, and I want to say this: that if a Northern man must preside at New Orleans next year there is no man I would rather have in the Chair than Dr. Moore (Applause), and when you get there, we will give you a gin fizz (Applause), the only one made on the New Orleans plan (Laughter).

President Torrance: We are now ready for nominations for Treasurer.

Dr. Thomas E. Smith, of New Jersey: It has been my privilege to have considerable to do with the office of Treasurer during this past year, and as someone has said in the nomination of the other candidates, one of the requirements is efficiency in the office. I have found out that our present Treasurer, Dr. Schneider, was always one hundred per cent efficient, and I take great pleasure, therefore, in presenting his name for the office of Treasurer of the Association.

Dr. Schneider: I would like to withdraw my name at this time as a candidate for the office of Treasurer, and would like to present the name of Dr. Jacob, of Tennessee; and if I am not out of order, I would like to make this selection unanimous.

Dr. Dalrymple: It gives me pleasure to second the nomination of Dr. Jacob, of Tennessee.

President Torrance: Dr. Smith, do you accept the motion of Dr. Schneider that his name be withdrawn?

Dr. Smith: I do, under the circumstances, yes.

President Torrance: Dr. Schneider having withdrawn his name from the nominations there remains only one nomination.

(It is moved and seconded that the Secretary be instructed to cast the ballot for Dr. Jacob, of Tennessee, as Treasurer. On vote the motion was carried unanimously.)

Acting Secretary Day: According to the motion just passed, I hereby cast the ballot of this Association for Dr. M. Jacob as Treasurer. (Applause.)

Dr. Dalrymple: I would like to make a remark while the tellers are counting the votes. I take pleasure and feel honored in representing the South in this matter, and extend a very cordial invitation in behalf of the South to the Association to meet in New Orleans in 1919. If you remember, the meeting was to be held there in 1914, and on account of the conditions of foot and mouth disease at that time the meeting was called off. We had made every arrangement to have it held there then, but owing to the conditions the meeting was skipped; and I therefore feel it was a deferred meeting. If your Committee should decide to go to New Orleans I am very sure you will be treated nicely, and those who have not been there before will be treated to the unique sights of old New Orleans. Therefore I take pleasure in extending a cordial invitation to meet in New Orleans in 1919. (Applause.)

Dr. Cooley: There having been an invitation sent by the Chamber of Commerce of Cleveland, and I representing that district of Ohio in which Cleveland lies, I stated to the Chamber of Commerce that I would withdraw that invitation in favor of New Orleans. (Applause.)

Dr. Moore: I believe the Constitution permits us at this time to settle the time and place of next meeting. Therefore I move you that we hold the next meeting at New Orleans.

(Motion seconded.)

President Torrance: I always understood that the place of next meeting was settled by the Executive Board.

Dr. Moore: If not otherwise provided.

Dr. Mayo: I want to say to the members here that I am heartily in favor of New Orleans so far as one can judge at the present time. I have stopped many times in that wonderful old city. I even had one of the gin fizzes and I feel they are worth going to New Orleans to get. But it seems to me that under the conditions that prevail at the present time, war conditions, that none of us can foretell what the future will bring forth—I feel that this matter ought to be referred to the Executive Board for final action, knowing as they do the sentiment of the Association, and I believe they will give that the most careful consideration. But I can't help feel—I want to tell Dr. Cary and Dr. Dalrymple and all that bunch that I am for them, but I feel we should not take action now that might seriously embarrass us a little later.

I therefore move that this Association refer this matter to the Executive Board with a recommendation in favor of New Orleans.

Dr. Cary: Is there a motion before the house?

President Torrance: Yes.

Dr. Cary: What is the motion?

Dr. Torrance: To hold the meeting in New Orleans, and there is an amendment to that, that the matter be referred to the Executive Board.

Dr. Mayo: With a recommendation of this Association in favor of New Orleans.

Dr. Cary: I will second the motion of Dr. Mayo, and leave it to the Executive Board. We are willing to stand by the Executive Board.

Dr. Moore: With the consent of my seconds I will accept that amendment, and withdraw my original motion.

President Torrance: There is, therefore, only the one motion before the Association: that the matter be referred to the Executive Board with the recommendation of New Orleans.

(The motion was put to a vote and carried unanimously.)

Dr. Dalrymple: I would like to add that there is a probability at the present time that we may get transportation rates down to one cent a mile for that meeting. I was in Texas last month, and found they were getting a rate of one cent a mile to attend their State meeting. I think we can do that next year if we try for it. (Applause.)

Dr. Ward: I move that the Secretary be instructed to take the matter up with the view of obtaining reduced fares for the next annual meeting.

(The motion was seconded.)

President Torrance: It has been moved and seconded that the Secretary take up the question of obtaining reduced railway fares for members attending the next annual convention.

(On vote the motion was carried unanimously.)

President Torrance: The tellers have announced the result of the election for Secretary, as follows: Total number of votes cast, 256; necessary to elect, 129; Dr. Mayo, 163; Dr. Merillat, 76; Dr. Lyman, 17. (Applause.)

President Torrance: I have just received the result of the vote for Vice Presidents. The following five are elected, in order of the majority of votes they obtained: Dr. Eichhorn, 191; Dr. Cox, 161; Dr. Hart, 158; Dr. Smith, 129; Dr. Hollingsworth, 115. (Applause.)

On motion, the meeting adjourned to 6:15 p. m.

MORNING SESSION, WEDNESDAY, AUGUST 21, 1918.

The meeting was called to order by President Torrance at 10:15 a. m., as follows:

President Torrance: We will resume the business of the Convention by calling on the Secretary to make some announcements.

Acting Secretary Day: I am requested to announce to you that the banquet tickets are still on sale, and that the Committee will be very glad if all of you who wish to will secure your banquet tickets early, as they desire to know how many will attend.

President Torrance: I was instructed at the meeting yesterday to appoint a committee on the Liautard Memorial. I now beg to announce the following committee: Dr. Robert W. Ellis, Chairman; Dr. W. H. Hoskins, Dr. W. H. Dalrymple, Dr. W. H. Lowe and Dr. S. Brenton, with power to add to their number.

Dr. W. H. Hoskins: Are we to reconvene at 1:30?

President Torrance: We are supposed to reconvene at 1:30.

Dr. Hoskins: I move that we do reconvene at 1:30, and that we now adjourn.

(The motion was seconded by Dr. Kinsley, and, on vote, carried unanimously, the meeting adjourning at 12:35 p. m.)

AFTERNOON SESSION, WEDNESDAY, AUGUST 21, 1918

The meeting was called to order by President Torrance at 2 p. m.

President Torrance: We have just received a cablegram from overseas as follows: "Greetings from over here." It is signed, "Merillat, McKillip, Blattenburg, Hilty."

President Torrance: We have a few belated members who have come in and passed the Secretary of the Executive Board and are asking for re-election. If you will permit, we will now take up these members, and if you approve, we will put them on the list.

(Acting Secretary Day reads part of the names.)

Dr. E. L. Quitman: Inasmuch as all have passed the Executive Board, can't the Secretary simply read the name of the applicant and let it go at that?

President Torrance: If there is no objection, that will be done, omitting the names of the vouchers, the name of the college and the place of residence.

Dr. Quitman: I move that the rules be suspended and that these applicants be elected to membership.

(The motion was seconded.)

Dr. Dunphy: Inasmuch as there is an application there that has only one signature, I would like to ask the Secretary whether this gentleman is in the room?

Acting Secretary Day: Yes.

Dr. Dunphy: I would move that inasmuch as there is no member here from Indiana, the President be permitted to endorse his application in lieu of the other voucher.

President Torrance: We will have to delay that motion. The motion before the house does not apply to this one case, but to all the others. All in favor of Dr. Quitman's motion, that the rules be suspended and these applicants be elected to membership, signify the same by saying "aye"; opposed, "no." The ayes have it, and the motion is carried. It has been moved and seconded that the application of William A.

Martin, having but one voucher, be signed by the President in lieu of the other voucher. All those in favor, signify by saying "aye"; opposed, "no." The ayes have it, and the motion is carried. The Secretary will cast the ballot electing these applicants to membership.

Acting Secretary Day: I hereby cast the ballot of the Association electing these gentlemen to membership in our Association.

(On motion, the meeting adjourned at 5:48 p. m.)

MORNING SESSION, THURSDAY, AUGUST 22, 1918.

The meeting was called to order by President Torrance at 9:45 a. m.

The first order of business was the reading of the report of the Legislative Committee by the Chairman, Dr. W. Horace Hoskins. (See November Journal.)

(On motion, duly seconded and carried, the report was received and ordered to be spread upon the minutes.)

Dr. W. Horace Hoskins: I move that the suggestion contained in the report of the Legislative Committee, to change the Constitution and By-laws creating another section of the Association, to be known as the Section of Bureau of Animal Industry Employees, be adopted as a notice of amendment to the Constitution, to be acted on at the next annual meeting of the Association.

(The motion was seconded and, on vote, carried unanimously.)

President Torrance: Our next order of business will be the presentation of the report of the Salmon Memorial Fund Committee. This report will be read by the Chairman of the Committee, Dr. W. Horace Hoskins.

(On motion, the report was accepted and the Committee requested to continue.)

(Dr. W. Horace Hoskins then proposed to change the name of the Salmon Memorial Fund, adding thereto the name of Dr. A. D. Melvin, making the proposed name "The Salmon-Melvin Memorial Fund.")

(Dr. Newsom spoke in opposition to this plan, inasmuch as he thought it would be exceedingly cumbersome, or would become so, in view of the fact that prominent members of the Association would die and the Association might wish to add their names to the title of this fund.)

Dr. Winchester: Dr. Salmon was a man whose foresight was so far beyond that of most of our practitioners that he stood away up out of sight. I was not the first individual who suggested some memorial, but certainly the Massachusetts Veterinary Association was the first one to recognize the efficiency of Dr. Salmon, and we raised money to erect a monument, but after considering the monument, those further advanced than I am saw that a monument would be moss-covered and you would not be able to see the inscription by and by, and perhaps would be put in some obscure place where very few would ever see it. So, with the suggestion of Dr. Hoskins, it was decided to make it a memorial relief fund, and the moneys that were contributed for that monument came to me personally and were returned, throughout the western states;

I don't know just how much it was, but something like \$100; and I returned that to the subscribers throughout the west and middle west, telling them that the thing had changed its physical characteristics and we did not want to take their money under false pretenses; but if they felt like it we would be very glad to have their money returned, not for a Salmon memorial monument but for a Salmon memorial fund.

Of course, others must die—you and I—we don't know when. Of course, a good many of the young men do not know much about this movement. The reason the younger men do not know it is because they are too busy with their practice.

Dr. Way: I want to heartily endorse what Dr. Winchester has said. I am one of the younger men who unfortunately did not know Dr. Salmon very well. It seems to me that in creating a Salmon Memorial Fund, this fund was created for a specific purpose, as a memorial to Dr. Salmon. Now, we all love, respect and revere the memory of Dr. Melvin. He was one of our leading lights. But it seems to me that to change the purpose or the original intent of the Salmon Memorial Fund would be to deviate from a custom that many of the men who subscribed to this fund may not approve of. I would be delighted to see a Melvin memorial, but I do think we should leave the Salmon memorial as it is, as a memorial to the great man for whom it was originally started.

President Torrance: Are you ready for the question? It has been moved that the name of the Salmon Memorial Fund be changed to "The Salmon-Melvin Memorial Fund."

Dr. W. Horace Hoskins: I would like to offer an amendment, that this lay over for one year. The suggestion was made to me from several sources, coupled with the information; and I thought I ought to bring it before you, but I now think that this matter should be laid over for one year.

(The amendment was seconded by Dr. Kinsley.)

President Torrance: The amendment is that the matter should be laid over for one year. Those in favor of the amendment say aye; contrary, no. The amendment is carried.

We will now ask for the report of the Committee on Intelligence and Education.

Dr. Dunphy: The Committee has just completed its report, and I have requested the Secretary, Dr. Cassius Way, of New York, to read the report to the Association.

Dr. Cassius Way: (See October Journal.)

Dr. V. A. Moore: I do not wish to be critical, but there were two or three terms used that I think were either misspoken or written inadvertently; one was in regard to the entrance requirements, as to the units. Units are very different from credits.

Dr. Way: The term was seven credits, and in parentheses the word "units." It reads as follows: "At least two years of high school education of at least seven credits (units) or their equivalent."

Dr. Moore: Referring to the colleges, what were the words used?

Dr. Way: "One of the colleges at least was visited by the Committee, and their work was carefully investigated."

Dr. Moore: One other: In the report it spoke of "The Executive Committee," using the word "committee" instead of the word Board."

Dr. Way: That shall be corrected.

Dr. Dunphy: I might say, in explanation to Dr. Moore's exceptions there, and what he said in regard to the Dominion of Canada, that we could only act for the Dominion of Canada in regard to the American Veterinary Medical Association. The War Department did not take that up at all, and the Civil Service Commission have not had the Ontario Veterinary College on their accredited list for a number of years, owing to the fact that the principal of that institution objected to having an examination of the school made. Now, I took this matter up with Dr. Grange, the principal of the institution at the time, and requested him to appeal to the Secretary of Agriculture, or to the Chief of the Bureau of Animal Industry, and offer a chance to have that school investigated and put on the list. After a whole day's argument and appeal to Dr. Grange he agreed to do this. I have talked to Dr. Mohler, the Chief of the Bureau of Animal Industry, at Washington, and he had assured me that he would be well pleased to inspect that college and recommend it for the accredited list; but I have learned from the Chief of the Bureau, Dr. Mohler, since I came here, that Dr. Grange had only taken this up as a personal matter, in a personal letter. Consequently, the Bureau of Animal Industry have had no chance as yet to act; and I sincerely hope that the change in the standing of the Ontario Veterinary College will come about in a few months. (Applause.)

Dr. Ernst: As to the terms of affiliation, or, rather, of that report in connection with the affiliation of the two colleges in Washington, in the absence of an affiliation both are discredited. An affiliation occurring, will the affiliated institutions be accredited for the ensuing year? Is that the sense of the report, although they still remain discredited for the term 1919?

Dr. Way: The sense of the Committee, Mr. President, is that if an amalgamation can be brought about in Washington of these two veterinary colleges, it will be a benefit for all parties concerned; and if an affiliation is brought about, of course, the amalgamated colleges must meet the requirements of the American Veterinary Medical Association as soon as possible. Your Committee will be ready at all times to make an investigation and look over the work that is being carried on, but to be accredited the amalgamated colleges must of course meet the requirements of the American Veterinary Medical Association. If they do, then it is the sense of the Committee that they shall be accredited for the coming year.

Dr. Kinsley: That is the very point I wanted some information on. It seems to me to be just a little unusual for a body of this kind to recommend that two separate, distinct institutions be amalgamated. I believe if this is desired it should be put in other wording. Most of us do not realize whether such a thing is possible. If this recommendation would apply to some locations perhaps it would not be safe to venture into that community for some time; that is, for the committee.

Dr. Dunphy: I might say in answer to Dr. Kinsley that we have had the representatives and Deans of both of these colleges before us. They

are both anxious that this matter should be brought about. They are both aware of the condition that exists at each college; they are both anxious to make one good school of these two colleges; and we have a perfect understanding with these two Deans.

Situated as the Committee now is, we have Dr. Kiernan in Washington, we have Dr. Way in New York—two members of the Committee that can meet in Washington at any time and go over the status of these two amalgamated colleges, and, provided they find the colleges can come up to the requirements, they will recommend them, and we will take care of them next year. I might say we have had a perfect understanding with these Deans.

Dr. Mayo: Mr. President, has a motion been made to accept or adopt the report of the Committee?

Dr. W. Horace Hoskins: Receive the report.

Dr. Mayo: I make such a motion.

(The motion was seconded, and, on vote, carried unanimously.)

President Torrance: What Committee is ready to report now?

Dr. Way: I have the names of two proposed honorary members, but before that I would like to make a report in reference to the Committee on Intelligence and Education, as follows: "That the recommendation of the Committee pertaining to the entrance requirements in veterinary colleges for 1918 be referred to the Executive Board with the request for immediate action."

Dr. Dunphy: I take pleasure in supporting that motion, Mr. President.

President Torrance: Are you ready for the question? (Question.) All in favor of the motion will signify by saying aye; opposed, no. The motion is carried.

Dr. Way: Mr. President, I would like to make another motion, "That the recommendation of the Committee on Intelligence and Education with reference to a special committee to compile a history of veterinary science be adopted."

Dr. Hoskins: I move it be referred to the Executive Board. This is a matter involving some expense, and we will have to take that up in connection with the Budget Committee.

Dr. Murphey: I don't think there is any need to do that. The Association took action at the fiftieth meeting, in New York, to appoint a committee. Dr. Hughes was chairman of that committee, and the work he started and attempted was largely lost. The committee that continued that gave a very different report, as published in the proceedings of the Association, from that contemplated and begun by Dr. D. Arthur Hughes; and it seems to me the Association can take charge of that without referring it to the Executive Board, for a considerable part of that work will not be finished for a number of years.

Men still living can recall incidents that occurred during the past fifty years, or know the men personally who were the original workers in veterinary science and educational work and control work and practice.

Dr. Hoskins: If there is already authority on the record, I withdraw my motion.

President Torrance: I would like a little more information on this. Dr. Murphey gives me the impression there is such a committee in existence, although it has not been doing anything. It may be the committee has passed out of existence from inactivity; and I think it would be wise for this Association to give expression to some opinion as to whether it considers this object of sufficient importance to have a committee which will have some activity about it.

It is hardly fair, I think, to the incoming President to ask him to carry out an intention expressed so long ago as the New York meeting, and which has been in abeyance ever since.

Dr. Way: May I say just a word? I don't want to take up all the time in reference to this report, but the original committee which was appointed to compile a history of veterinary education, a history of veterinary science in America, was headed by D. Arthur Hughes, and he was a very energetic and very active man in such work.

The request comes at this time from our good friend, Dr. Moore, from St. Joe, that the work that that committee did should be assembled if possible and completed by some competent men, by men who are competent to write a history that will be of interest; and if we can resumé the notes of the previous work done and compile it in a way attractive to the members, and especially to some of us new members, I think Dr. Moore's suggestion is an admirable one.

Dr. Murphey: I believe since the time Dr. Hughes' committee was appointed—I don't know personally, but Dr. Lowe was secretary of the committee, and has published a considerable amount of the material. No report was published of the original committee.

Dr. Moore: I think I was a member of the committee, and I think Dr. Hughes was a member of the second committee and I think that Dr. Hughes and I corresponded a good deal about the matter, before his death; and if my memory serves me right there was never any committee appointed after Dr. Hughes' death, and Dr. Lowe did submit a report of some kind, or rather a letter, to the President. Dr. Cotton, who was President at the time, called my attention to it at a meeting; and I don't believe it was ever submitted, because it was not in the form of a report, but rather in the form of suggestions to the President; and perhaps Dr. Cotton can give us some information on that, or, it may be in the files of the Secretary; but I don't believe anything was ever published along that line—that I am aware of, at any rate.

Dr. D. M. Campbell: I believe Dr. Way's motion was not seconded. I should like to second it.

President Torrance: I now understand that the previous committee is out of existence, and the present motion in order. It has been moved by Dr. Way, and seconded by Dr. Campbell, that a committee on the History of the Profession be appointed. All in favor signify by saying aye; contrary, no. The motion is carried.

Dr. Way: The Committee on Intelligence and Education have drawn up the following: "We, the undersigned, hereby propose the name of Mr. E. S. Bayard, Editor of the National Stockman and Farmer, of Pittsburgh, Pa., for honorary membership in this Association. Mr. Bayard is one of the leading animal husbandry men in this country, and is a

member of the Board of Trustees of the New York State College, and editor of one of the leading magazines pertaining to the industry.

I move that the recommendation of the committee be adopted, electing Mr. E. S. Bayard to honorary membership in the Association.

(The motion was seconded by Dr. Campbell, and, on vote, carried unanimously.)

Dr. Way: Mr. President, the Committee on Intelligence and Education have approved and submit the following: "We, the undersigned, hereby propose the name of John J. Ferguson, of Chicago, for honorary membership in the Association."

Mr. President, I move the election of Mr. Ferguson to honorary membership.

(The motion was seconded by Dr. Campbell, and, on vote, carried unanimously.)

President Torrance: What other committee is ready to report?

Dr. V. A. Moore: I should like to make a report of the Committee on Tuberculosis. Dr. Rutherford stated he could not be here, and he asked me to make a report for the committee.

It is obvious, on such short notice, that the committee is unable to make a formal report other than to call the attention of the Association to the fact that in a good many places in this country work is being done—some of it outstanding in its results or ready for report, but one thing the Committee feels should be recorded as a step in advance, as taking place in this country, is the accredited herd system. We believe that it stands out preëminently as the greatest advance in the control of bovine tuberculosis.

Dr. Dalrymple: There is a committee that has been left off the program. Dr. Smith is here, I believe—

President Torrance: Excuse me, Dr. Dalrymple, but I think we will have to get along with one thing at a time. We have just received the report of the Committee on Tuberculosis. What is your pleasure?

(It was moved by Dr. W. H. Hoskins and seconded by Dr. Mayo that the report be received. On vote the motion was carried unanimously.)

Dr. Smith: Mr. President, as Secretary and Treasurer for the Veterinary Relief Fund I propose to submit a list of the subscribers up to date. The Treasurer has reported in his published report what was deposited, but since that was printed I find that I deposited a little more money with him. At the present time we have \$5,174.94 to the credit of this committee, and it is made up of 274 subscribers. The list is here and no doubt it will become a part of the proceedings of this meeting. In making this report I want to thank the different secretaries of the different associations throughout the country who aided so materially in the collecting of this money.

In the books being turned over to me I find a little difficulty in getting the proper names and the locations of the pledges that were made. We had to take our report from the stenographer, and in this list it may appear that some of the names are misspelt because there were times when I was not quite able to decipher the different signatures. But I did the best I could along that line—and in other cases secre-

taries sent in the contribution and the pledge for the Association in one check; but as far as possible, where I could, I gave the individual subscriber credit for the amount that he subscribed to this fund. (See November Journal.)

Dr. Dalrymple: Mr. President, as a member of the Committee, it seems to me we have in the treasury over \$5,000, and it seems there are people over there who need the money—our confreres on the continent of Europe.

I have a letter from Dr. Vallee, President of the Anglo-Franco-Belgian Veterinary Relief Fund, and I have a rather free translation of part of his letter, which I think will interest you, and I will read these few notes: He writes that there are 589 French veterinarians who have had their homes destroyed and their practices ruined. He believes that 400 will have recourse to the Fund. Most of them will not need help until peace is declared, as they are in the army; but they will need help in establishing their practices. At present the Committee over there has about \$7,000. It spent nearly \$2,000 to repatriate veterinarians and their families captured by the Germans. They are spending about \$100 a month, and funds are becoming quite strained. The Committee are receiving almost nothing, and when the time for distributions comes they will have only about \$4,000, which leaves about \$100 per month for each French veterinarian. Professor Vallee advises that the Committee can hardly expect any aid from over there. I believe the appeal is much stronger than that. They need money, and I believe we ought to do something to help the Committee along. I believe that no money has been sent over—and we are a part of that, not only looking after our own men and their families, but we are supposed to assist those poor fellows across the water. Now, another suggestion. I think all of us know that Dr. Liautard was the originator of this Fund over there, and I think it would be a splendid tribute to his memory to distinguish our Fund from the Anglo-Franco-Belgian Fund, and to call it the "Liautard Relief Fund," to perpetuate his name in this Fund, as he was the originator of it.

I see those two things in the letter of Dr. Vallee—that they are getting strained in funds, and will be glad to accept any aid offered. I just bring that before the Association as a suggestion, that something ought to be done to send them something over there to help them out.

Dr. W. H. Hoskins: I would like to ask if the Committee has any amount in their mind to recommend.

Dr. Dalrymple: No, I believe not.

A Member: I move that half of our fund be given to the Liautard-American Relief Fund.

(The motion was seconded.)

A Member: I would like to ask if any of the families of American veterinarians in France are now in distress.

Dr. Smith: In answer to that I would say, no. There has been a little relief passed out to some of the families that were temporarily embarrassed, but up to this meeting we did not have any way in which to distribute this money or take it from this Fund; but I understand the Executive Board has made it possible to allow the disbursing officer

to take care of such emergencies that arise. But the principal relief passed out was that some of our men going from the cantonment and getting a quick order to sail over, found themselves embarrassed, and just wanted a little money to go over; and that has been taken care of through private sources.

A Member: I also want to ask whether the collectors of that Fund in each separate State are still in office, or whether we should send it to the Treasurer.

Dr. Smith: That is for this meeting to decide, whether they wish to continue this Committee or not; but up to today I have been receiving whatever money was offered to me, and, unless the Association rules differently I will continue to take all money that comes my way, and deposit it through this Committee.

A Member: Through the very able efforts of Major Turner and his wife in Washington quite a sum was collected, and I believe she told me before she went home that she made a report, but inasmuch as one gentleman suggested that we send every penny of our Fund and inasmuch as in the near future our own men and their families will be needing more money, it seems to me the Committee should be made permanent, and the state secretaries should be made permanent, for the period of the war at least. Five thousand dollars seems a very small sum indeed for the work in hand.

Dr. Winchester: I seconded Dr. White's motion to go fifty-fifty with this fund, but I don't know who has the distribution of it. I don't know what organization or what body of men in this organization has power to distribute. Dr. Smith says he will take all he can get. I don't blame him, but he will have to keep it; he has no right to dispense it.

I think it advisable to find out who is responsible for the distribution, and by what authority they can distribute.

Dr. Mayo: In order to get this started off right I move that the report of the Committee be accepted and the Committee continued. (Motion seconded by Dr. Hoskins.)

President Torrance: There is already a motion before the house, but as the motion of Dr. Mayo naturally takes precedence of it, with the consent of the assemblage I will put that motion first, that the Committee report be accepted and the Committee continued.

(President Torrance put the motion to vote, and it was carried unanimously.)

Dr. Hoskins: I don't know whether Dr. Winchester was in the room at the time, but the Executive Board made a recommendation that \$500 be in hand as a revolving fund to meet these emergencies of any one needing temporary aid. That has been passed.

Now it is in the province of the Association to decide as to what shall be done with this fund, so that the motion that we send one-half of this fund over there, to the Fund on that side, as indicated by Dr. Dalrymple, is to my mind thoroughly in order.

Dr. Mayo: I fully agree with these suggestions and recommendations made. I think, however, that this motion ought to refer the matter to the Executive Board with power to act, and with the recommendation that half of this Fund be sent to the Anglo-Franco-Belgian Relief Com-

mittee. We will have to change the name to the Liautard Relief Fund later on, it seems to me, between this meeting and a later meeting, to decide. There may be emergencies come up that need prompt action, and that will have to be referred to the Executive Board.

(The motion was seconded.)

President Torrance: It is moved that the available funds of the Veterinary Relief Fund be appropriated and sent to the Anglo-Franco-Belgian Relief Fund in the hands of Dr. Vallee. It is moved that the matter be referred to the Executive Board with power to act, with the recommendation that half of this fund be sent to the Anglo-Franco-Belgian Relief Fund. I will put the amendment first.

(On vote, the amendment was carried unanimously.)

President Torrance: The amendment is carried.

Dr. Mayo: I move that this fund be called "The Liautard-American Relief Fund."

(Motion seconded.)

Dr. Quitman: I don't want to appear in the light of detracting any from the works and glories of Professor Liautard. While I am not a very old man, I had the pleasure of knowing him slightly, listening to his lectures, and attending clinics, although not actually an attendant at his college. However, we have had and will have an opportunity to honor the name of Professor Liautard in many ways. I believe this Fund should be known as "The American Fund" or "The American Veterinarians' Fund." I don't believe in too many hyphenated names. The money is being gathered here. We are going to add to this Fund from time to time, and I personally would like to see that remain as "The American Veterinarians' Fund" or some similar name. I am not designating an absolute name. We are honoring Liautard in other ways, and I don't believe we should be entirely led away by the spirit of sentiment. Let us think it over.

President Torrance: It has been moved and seconded that the name of the Veterinary Relief Fund be changed to "The Liautard-American Veterinary Relief Fund." Are you ready for the question? (Question.) All in favor signify by saying "aye"; contrary, "no." The ayes have it, and the motion is carried.

Dr. Dalrymple: I might mention that I hope the name "American" there will save confusion between that and the Liautard Fund on the other side.

President Torrance: We will now have the report of the Committee on Resolutions.

Dr. Stange: Mr. President, Dr. Reichel has asked me to present these resolutions to the Association. (See November Journal.)

DISCUSSION ON RESOLUTIONS CONCERNING BUREAU OF ANIMAL INDUSTRY.

Dr. Mayo: In this resolution, and also in the one preceding, there is no reference to Canada, and I think that the sentiment of both of these resolutions ought to be equally applicable, and that copies should be sent to the corresponding officials in the Canadian Government.

President Torrance: Is there any further discussion? As a Canadian I am glad to hear the kind remarks of my friend Dr. Mayo, and I take it

as an indication that the expression of feeling contained in the resolution applies equally to Canada as to the United States.

Dr. Kinsley: Do I understand that to be incorporated in these?

President Torrance: No, it does not mean that.

Dr. Kinsley: Well, I second the motion.

Dr. Mayo: I think we had better pass this, and then make a separate motion afterwards to cover the matter.

President Torrance: Are you ready for the question? All in favor of the adoption of this resolution signify by saying "aye"; contrary, "no." The motion is carried.

Dr. Mayo: Now, Mr. President, I will put my suggestion in the form of a motion, that these resolutions, properly prepared—I mean to say the necessary change in the wording—copies of these resolutions be sent to the Canadian authorities having charge of the similar work in that country.

(The motion was seconded by Dr. Way.)

President Torrance: It has been moved and seconded that copies of these resolutions, with the necessary change in wording, be sent to the Canadian authorities. All in favor signify by saying "aye"; contrary, "no." The motion is carried.

Dr. Campbell: I move that the report of the Committee on Resolutions be adopted as a whole, and the Committee discharged.

Dr. Quitman: Reference was made to the Saddle and Sirloin Club. No reference was made to its location, which should be done, I think.

President Torrance: That is a minor matter. That can be inserted.

(Dr. Campbell's motion was seconded by Dr. Kinsley, and, on vote, carried unanimously.)

President Torrance: The next report is that of the Audit Committee. Has the Audit Committee any report to present?

Dr. Day will read the report in the absence of Dr. Cooley.

Acting Secretary Day: "The Audit Committee respectfully submit the following report: We find the Treasurer's report as submitted to be correct, after going over same and checking each deposit made and each expenditure item in the several funds, namely: American Veterinary Medical Association Fund, Journal Fund, Relief Fund."

Dr. Mayo: I move that the report be accepted and the Committee discharged.

(The motion was seconded by Dr. Quitman, and, on vote, carried unanimously.)

President Torrance: The report of the Budget Committee. Is that report ready?

(The report of the Budget Committee was not at hand.)

President Torrance: The report of the Committee on Necrology. Is that report ready?

(No report is at hand at this time.)

President Torrance: The report on "Army Veterinary Service."

(No report is ready at this time.)

President Torrance: We will take up the report of the Committee on Anatomical Nomenclature.

The report of the Committee on Veterinary Anatomical Nomenclature was read by the Chairman, Dr. H. S. Murphey. (See November Journal.)

Dr. Mayo: I move that the report of the Committee be received and the Committee continued.

(The motion was seconded by Dr. Quitman, and, on vote, carried unanimously.)

President Torrance: That brings us to the end of the reports of the committees; and I would ask our Secretary if he has any other business to be presented at this time.

Dr. Mayo: I have some new business I would like to present to the Association.

President Torrance: Dr. Mayo.

Dr. Mayo: The rapid growth of this Association necessitates a corresponding increase in the expenses in connection with the annual meeting; therefore, I move that all the necessary expenses incurred in connection with the annual meetings of this Association, such as the expenses for halls, for the general and sectional sessions and for committee and officers' meeting rooms, the printing of programs, and providing of proper facilities for carrying out the program, be paid by this Association.

Dr. Hoskins: I would like to second that, and have it referred to the Executive Board, for the reason that the cost of carrying on these meetings is becoming a tremendous problem for many locations, and it makes locations hesitate to invite us, because there has to be a very large sum of money raised by the local committee on arrangements, in the convention city; and I think that prevents our going into sections of the country where I think we might be very helpful. It is becoming a very serious matter, and I think we ought to call a halt on the burden being placed on those in the city at which the convention is held.

President Torrance: Could not that go over for a year?

Dr. Hoskins: I am simply speaking in favor of the resolution.

President Torrance: The Executive Board to report to this meeting right here?

Dr. Hoskins: Yes.

Dr. Mayo: This does not require a change in the Constitution and By-laws; and therefore it does not need to go over until next year for action. It is simply doing away with the custom that has been observed in this Association for a number of years, and it is made for the very object which Dr. Hoskins has so ably stated.

The Association has grown so tremendously in the last two years that it is neither right nor proper that this burden, which is strictly a business proposition of this Association, should be borne by the local veterinarians.

(On vote, the motion was carried unanimously.)

Dr. Cary: I move that the incoming President be instructed to appoint a committee of three, to be known as the Publicity Committee, to see that the notices and reports put in the papers are correct, and also to see that we get some notice. You will note the absence of news in the Philadelphia papers, and what has been put in has been erroneous.

I believe we are losing a certain amount of educational value by not

having notices appear in the papers, and this committee of three, to be appointed by the incoming President, is to look after this for the coming year. I think it ought to be made up of some of the men in the immediate vicinity, who would have influence with the papers.

Dr. Moore: I wish to second that motion. I believe we should have a committee to look after the daily press. That is one thing that has been sadly overlooked, not only in the proceedings of our national associations but also in the proceedings of the state associations. What is everybody's business is usually no one's business, and we have not had the kind of publicity we should have in our daily press.

Dr. Kinsley: I should like to ask if this simply refers to the time the Association is in session.

Dr. Cary: Yes.

Dr. Kinsley: I should like to support that motion, but if we have a committee to act throughout the year, it is likely to get us in trouble. I would amend that motion to read that the committee is to act only while the convention is in session.

(The amendment is accepted by Dr. Cary.)

Dr. Mohler: I should like to say that I saw column after column of matter prepared by the Publicity Committee for the local press—that is, sent to the city editors—and no publicity committee can force city editors to publish news on a meeting of this kind when there is so much war news they can get. I don't want this to go out as a reflection on the Committee on Publicity.

Dr. Campbell: I should like to say the same thing as what Dr. Mohler has said in regard to the committee of last year and the year before. I know they both made sincere efforts to get notices published in the daily press. I should support that except that the words "daily press" should be removed from that, or, at least, that the "farm press" be included in that.

I know something about the conditions of the daily press. There would be great value by getting this in the farm press or live stock press. We cannot send this material to the city editors with much chance of getting it through, but in regard to the live stock editors, who have been invited to come to our meetings—if they cannot come and we send them a report later on, they feel much more like using it than if they never had any consideration at all. I think the committee will have lots of space given them in the live stock and farm press, but not in the daily press.

Dr. Hosking: Cannot this be left to local men? It might be a debatable question as to whether the committee is at fault or the fellow who works the scissors.

President Torrance: It has been moved by Dr. Cary and seconded by Dr. Mohler that the incoming President be instructed to appoint a committee of three on publicity, in connection with the next meeting of the Association.

The viva voce vote being inconclusive, a show of hands is asked for by President Torrance. On the vote by the raising of hands the motion is defeated.

Dr. Mayo: From a business point of view it is important that we look into the future as far as we can with our present knowledge; and the business feature of this Association is an important one, and growing every year. The subject that I am about to present I present with a great deal of trepidation for fear that my motives may be misunderstood. I wish to assure you, however, that there is absolutely no selfish motive in this proposal that I shall make. The inference may be that Mayo is looking for a job. I want to say to you that I could not consider it at all; and there is another phase—well, I will read this first: This is a proposal to change the Constitution and By-laws with a view to combining the offices of Secretary and Editor of the Journal so that the Association may have a permanent business office where all the business activities of the Association will be carried on. It is somewhat, or practically, the same plan, except in a lesser degree, that is now carried out by the American Medical Association. In proposing these changes, it does not necessarily imply that they shall be made next year, but I make them now so that if the Association deems it wise a year from this time to put them into effect the opportunity will be there. If they do not see fit to do this, why, that is for the Association to decide.

I mentioned myself particularly because I am pressing the resolution, but it might be equally embarrassing for whoever is elected to be Editor of the Journal for the coming year; and it seems to me, then, it will be a question that will have to be decided for next year, as the circumstances warrant. I am only providing for this contingency. The proposal to change the Constitution and By-laws is as follows:

“Article V, Section 4, and Article 13 of the By-laws. Striking out the words ‘and the properties of the official journal office’ and inserting ‘The Secretary shall also be Editor and Business Manager of the official journal of the Association and shall perform the usual duties of such position,’ and striking out the first paragraph of Article 13 of the By-laws. Also changing paragraph L, Section 7, Article V, by inserting the words in line 2 ‘Secretary, who shall also be Editor,’ and striking out the word ‘an.’”

Dr. Campbell: I move that the communication be received and take the usual course, for consideration at our next meeting.

(The motion was seconded by Dr. Dalrymple, and, on vote, carried unanimously.)

President Torrance: Is there any report from the Executive Board?

Acting Secretary Day: I have the name of one applicant here that has been favorably reported upon by the Executive Board: Dr. Joseph Alexander Allen, graduate of the University of Toronto and of the Ontario Veterinary College, 1916; vouched for by Dr. George Hilton and Dr. F. Torrance.

Dr. Kinsley: I move that the rules be suspended and that this gentleman be elected to membership in the Association.

(Motion seconded by Dr. Hoskins and, on vote, carried unanimously.)

President Torrance: Has the Executive Board any report to be made this morning? It is necessary, I consider, that the Executive Board report to the Association as to the election of Editor and Manager for

the Journal for the ensuing year. If it is not done at this meeting I don't know when it can be done.

Dr. W. Horace Hoskins: In order that the Association may go on with the program, I think your Executive Board can meet at this time and report later in the morning.

President Torrance: We have a little business in the way of reports still to be presented. The report of the Committee on Necrology has not been presented yet. Is Dr. Cahill here?

(No response.)

Dr. Mayo: Do we know that that report will be presented here?

President Torrance: No.

Dr. Mayo: Can we not move that this report be presented to the Executive Board, to take the usual course?

President Torrance: Yes.

Dr. Mayo: I make such a motion.

(The motion is seconded.)

President Torrance: It has been moved and seconded that this report be presented to the Executive Board, for such action as they see fit.

(On vote, the motion was carried unanimously.)

President Torrance: The Budget Committee desires to report through myself as Chairman that they have examined the finances of the Association, and find them to be as reported, and in good condition. They recommend that \$1,000 be appropriated for the use of the Committee on Legislation; and that the Treasurer be instructed to invest \$3,000 of the funds of the Association in war bonds of the United States and \$3,000 in war bonds of Canada.

(It was moved by Dr. Dalrymple and seconded by Dr. Mayo that the work of the Budget Committee be accepted. On vote, the motion was carried unanimously.)

President Torrance: Now the Secretary has a further report from the Executive Board.

Acting Secretary Day: The Executive Board recommend the following with reference to the Klein resolution, the resolution that was held over from last year: They recommend that the amendment to Section 4 of Article II of the By-laws should read as follows:

"Except as provided for in Section 3, only those veterinarians may be elected to active membership who have been duly graduated from an approved veterinary college maintaining a course of instruction extending over four collegiate years of not less than thirty-two weeks each and of not less than seventeen credit hours per week, beginning with the session of 1919-20."

Dr. W. H. Hoskins: I move that this recommendation by the Executive Board be adopted.

(The motion was seconded by Dr. Mayo.)

President Torrance: The amendment to the Constitution was given notice of last year—it has been moved and seconded that it be adopted. This is a matter which should not be passed without some little consideration, as it involves a change which affects all the veterinary colleges in the United States and Canada. Are you ready for the question?

(Question.)

President Torrance: Dr. Mayo, didn't you have something to say in regard to postponing action on this, a little while ago?

Dr. Mayo: I would like to have that proposed change read once more, please.

President Torrance: I understood that some member objected, because the action by the United States Government in regard to veterinary education rather clashed with this proposed amendment—until the United States regulation had been tried out. That was my impression, but I forget who spoke of it.

(Acting Secretary Day again reads the amendment recommended by the Executive Board.)

Dr. Mayo: Mr. President, I really don't understand this fully enough to feel qualified to vote on it at the present time. It seems to me that this matter is one that requires a knowledge of the status, or the probable status, of the regulations of the War Department and the Bureau of Animal Industry before we can—I don't know in what respect it clashes with it, or whether it does clash with it.

Dr. Stange: This is a change which is proposed to clarify the statements made in our Constitution and By-laws. It read something to the effect that we require four collegiate years of not less than seven months each. Well, now, a month sometimes means four weeks and sometimes it means something else. Here we have a definite statement of four years of thirty-two weeks each, which does not take effect this year but next year; and I think we can rest assured it is not going to clash with any regulations of the law.

President Torrance: I would ask, if the recommendation is passed, whether it will have the scrutiny of the Executive Board?

Dr. W. H. Hoskins: Yes.

(The motion was put to vote and carried unanimously.)

Acting Secretary Day: The Executive Board move to amend Section 5, Article II, "Beginning with the collegiate year of 1919-20 the matriculation requirement shall not be less than four years of high school work or equivalent studies taken in other preparatory schools, provided, that candidates for admission to approved veterinary schools who cannot present a satisfactory certificate from the proper official of the school or schools attended covering the required amount of preparatory work may be admitted upon passing satisfactory examinations approved by the proper state educational officers."

President Torrance: Gentlemen, you have heard the proposed amendment of the By-laws. Are you ready to vote on this?

(It was moved and seconded that the above resolution, recommended by the Executive Board, be adopted as read. On vote, the motion was carried unanimously.)

Acting Secretary Day: I also wish to state that the Executive Board recommend that Dr. Dalrymple be appointed Editor of the Journal. Is there any discussion? Are you ready for the question?

(Question.)

President Torrance: All in favor of accepting this recommendation of the Executive Board signify by saying aye; contrary, no. The ayes have it and the motion is carried.

Acting Secretary Day: The Executive Board also recommend that the Treasurer of the Relief Fund send immediately a sum not to exceed \$2,500 to Professor Vallee for the relief of needy veterinarians of our Allies.

Dr. Murphey: It seems to me when I heard the discussion on this before that the suggestion might not be out of order in this respect, and that is that the ranking veterinary officer from the Dominion of Canada and the ranking veterinary officer from the United States, in France, be appointed a committee to make a suitable presentation of this to Professor Valee, to properly represent the dignity of this Association.

Dr. Hoskins: I second the recommendation.

Dr. Mayo: I certainly think that an excellent suggestion, that this presentation be made through the ranking veterinary officer of the forces of the United States and Canada.

Dr. V. A. Moore: I would heartily support that, but does the military situation over there allow this to be done immediately? It might be possible that they could not do this because they would be with detachments. It might cause delay.

Dr. Mayo: Let us put it "if possible" or "if practicable."

President Torrance: It has been moved and seconded that the recommendation of the Executive Board instructing the Treasurer of the Relief Fund to send immediately \$2,500 to Professor Vallee for the immediate relief of veterinarians in the Allied territories suffering from the ravages of war, be concurred in; and if practicable the ranking officers of the American and Canadian armies be formally requested to make the presentation to Professor Vallee.

Dr. Mayo: I understood that to mean the ranking veterinary officers.

President Torrance: The ranking veterinary officers. Are you ready for the question?

(Question.)

President Torrance: All in favor signify by saying aye; contrary, no. The ayes have it and the motion is carried.

Acting Secretary Day: I believe that is all the recommendations of the Executive Board. I have a number of notes here, and some might have got mislaid, but I believe that is all the recommendations of the Executive Board.

INSTALLATION OF OFFICERS.

President Torrance: In turning my reins of office over to my successor I wish to thank the members of the Association for the orderly way in which they have conducted themselves throughout the convention. I will now ask Dr. Mayo to escort the new President into the Chair.

President Torrance: Dr. Moore, I am delighted to hand over to you the symbol of office, and bespeak for you the hearty support of the Association. (Applause.)

President-Elect Moore: Dr. Torrance and members of the Association: I thank you sincerely for this honor. I assure you it was not a thing I sought. Personally, I would have been very glad if this responsibility had fallen on the shoulders of another. However, I shall assume

the responsibility and do as well as I can—expecting, of course, the hearty support and co-operation of every member of the Association. I thank you. (Applause.)

I believe we now have to be introduced by asking people to escort the new officers.

Dr. Eichhorn (not present).

Dr. Goss (not present).

Dr. Hart (not present).

Dr. Smith (not present).

Dr. Hollingsworth (not present).

President Moore: The Vice Presidents are introduced by title. The Secretary needs no introduction, I believe, but we wish a word from Dr. Mayo.

Secretary-Elect Mayo: I certainly appreciate more than I can tell you the honor you have conferred upon me. I shall try to fulfill the duties, or carry out the duties, of the office just as efficiently as I can, without fear and without favor. (Applause.)

President Moore: Dr. Jacobs, the newly elected Treasurer (not present).

President Moore: Dr. Dalrymple, the newly appointed Editor of the Journal (not present).

President Moore: This, I believe, concludes my duties for the present.

There is with us a representative of Japan, Dr. K. Kasai, Assistant Professor of Veterinary Surgery in the College of Agriculture, Imperial Tohokin University, Sapparao, Japan, who would like to say a word, and I have arranged that he should, but the hour is so late and there are so few of us here, I will explain that he will have an invitation to address the meeting next year.

Is there any further business to come before the Association? If not, a motion to adjourn is in order.

(The convention adjourned at 1:15 p. m.)

MEETING OF THE EXECUTIVE BOARD.

The report of the meeting of the Executive Board of the American Veterinary Medical Association, held at the Hotel La Salle, Chicago, December 2, 1918, as follows:

The meeting was called to order by President Mohler. Those present were Dr. J. H. Mohler, Dr. T. C. Munce, S. E. Bennett, Dr. George Hilton, Dr. A. T. Kinsley, Dr. C. H. Stange; absent, Dr. R. A. Archibald. The first business was the election of chairman for the coming year. It was moved and seconded that the present chairman, Dr. J. R. Mohler, be continued for the ensuing year. Carried.

The minutes of the Executive Board meeting in Philadelphia were approved as amended.

It was moved and seconded that the invitation to hold the next meeting of the American Veterinary Medical Association in New Orleans, beginning the week of October 20. (The date of the meeting was changed later to begin the week of October 13, 1919.) Carried.

It was moved and seconded that the Secretary of the American Veterinary Medical Association was authorized to employ legal talent whenever the Association business demands it. Carried.

It was moved that the Secretary be allowed a revolving fund of \$200.00 for incidental office expenses. Carried.

The Executive Board adjourned to meet Tuesday morning, December 3, at 9:00 a. m.

Meeting called to order by Chairman Mohler. It was moved and carried that the Secretary have 200 mimeographed copies of the list of applicants be prepared for the New Orleans meeting and that a list of applicants be sent to each resident secretary for information regarding any of the applicants from their state. Carried.

It was moved and carried that the date of the New Orleans meeting be changed from the 20th of October to the 13th. Carried.

It was moved and seconded that the application blanks for membership be changed to read "Applications to be accompanied by a remittance of \$10.00. Five dollars for the initiation fee and five dollars for dues for the first year." Carried.

It was moved and carried that the chairman of the Executive Board in consultation with the editor of the Journal should appoint a sub-committee on the Journal. Carried.

?The meeting of the Board was called for the noon hour on December 3. Dr. Bennett was absent. At the request of President Moore it was moved by Dr. Kinsley that a committee of five from the United States and a committee of three from Canada be appointed by President Moore to deal with veterinary reconstruction problems in their respective countries. Carried.

The United States committee is: Chairman J. R. Mohler, Col. Stancliff, Dr. G. H. Robert, Dr. C. H. Stange and Dr. John Adams.

The Canadian committee appointed were: Dr. George Hilton, Dr. C. D. McGilvray and Dr. F. Torrance.

The Executive Board adjourned without date.

N. S. MAYO.

CONSTITUTION AND BY-LAWS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

CONSTITUTION

(As Amended)

Article I

Section 1. This organization shall be incorporated and known as the AMERICAN VETERINARY MEDICAL ASSOCIATION.

Article II

Objects

Section 1. The objects of this association are:

- (a) To protect and promote the professional interests of the veterinarian.
- (b) To elevate the standard of veterinary education.
- (c) To procure the enactment and the enforcement of uniform laws and regulations relative to veterinary practice and the control of animal disease.
- (d) To direct public opinion regarding problems of animal hygiene.
- (e) To promote good fellowship in the profession.

Article III

Members

Section 1. Membership in this association shall be of two kinds—Active and Honorary.

Active Members

Section 2. Active members must be graduates of veterinary colleges approved by the association and recommended by the Executive Board and elected to membership in accordance with the By-laws.

Honorary Members

Section 3. Honorary membership may be conferred upon any person resident in any part of the world, who has rendered valuable service to Veterinary Science. A person proposed for Honorary Membership must be recommended by the Committee on Intelligence and Education, and to be elected he must receive a three-fourths vote of the active members present at a regular meeting. Honorary members shall have all the privileges of active members, except that they shall not pay dues, hold office nor vote, nor have any right or title to or interest in any real or personal property of the association. Not more than three Honorary Members shall be elected in one year.

A sum of money each year shall be appropriated for the necessary payment of the Journal for Honorary Members.

Article IV

Meetings

Section 1. Meetings of the association shall be regular and special. The regular meeting shall be held annually. It shall be convened not earlier than July 15th, nor later than the 31st of December of each year,

unless otherwise ordered by a two-thirds vote of the members of the association, and notice of the selection shall be given to each member by the secretary at least sixty days before the date of the meeting, or at such time as may be designated by a special election held in accordance with the By-laws.

The time, place and duration of the regular meeting shall be fixed by the Executive Board within sixty days after the annual meeting unless otherwise ordered by the association at an annual meeting. Special meetings may be called by the President upon request in writing of not less than 200 active members. The time, place and purpose of special meetings shall be designated in the call.

Notice in the Journal from the Secretary shall constitute official notice of a meeting.

Article V

Officers

Section 1. The officers of the association shall consist of a President, five Vice Presidents, a Secretary, a Treasurer, and an Executive Board. They shall be elected at the regular annual meeting, and hold office, with the exception of the District Members of the Executive Board, for one year from the date of their election, or until their successors are elected and have assumed office. No person shall be eligible to the offices of President, Vice President, Secretary or Treasurer unless he has been a member in good standing for the five years preceding his election.

President

Section 2. The President shall preside at all meetings of the association. At the regular annual meeting he shall be expected to deliver an address. The President shall appoint members of committees and all officers whose appointments are not otherwise provided for; he shall perform such other duties as ordinarily devolve upon a president. He shall not be eligible for re-election.

Vice Presidents

Section 3. In case of death or resignation of the President, or in case of his inability to perform the duties of his office from any cause, the same shall devolve upon the Vice President in seniority for the remainder of the unexpired term, or until the disability shall be removed.

Secretary

Section 4. The Secretary shall perform all the clerical duties of the association, and be custodian of all its property except money, and the properties of the official Journal office. All moneys received by him shall be paid monthly to the Treasurer. He shall receive such salary and allowance as may be recommended by the Executive Board and approved by the association.

He shall give bond to the association in the sum of five thousand dollars (\$5,000), acceptable to the Executive Board. He shall present a written report at the regular annual meeting.

Treasurer

Section 5. The Treasurer shall account to the association for all moneys received. He shall give bond to the association in the sum of ten thousand dollars (\$10,000), acceptable to the Executive Board. At the expiration of his term of office he shall account for and turn over to his successor in office all moneys, vouchers and account books belonging to the association.

The Treasurer shall pay out moneys only on vouchers countersigned by the President and Secretary, or President and Editor, excepting minor expenses of the Secretary, and such revolving fund allowance as may be placed at the disposal of the Editor and Manager of the "Journal" by the Budget Committee.

The Treasurer shall at the regular annual meeting present a written detailed statement with vouchers covering all receipts and expenditures.

Properties

Section 6. All officers shall, at the expiration of their terms of office, turn over all property of the association to their successors.

Executive Board

Section 7. A—The Executive Board shall consist of seven members, one from each Executive Board district and one member at large, and it shall elect annually its own chairman.

B—Each member of the Executive Board shall hold office for five years, except the district members first elected under this Constitution. Those first elected from the First, Second, Third, Fourth and Fifth Districts shall hold office respectively for one, two, three, four and five years from the date of election.

C—The Executive Board shall constitute the Administrative Body of the association, and shall make all necessary regulations for carrying into effect the provisions of this Constitution and the By-laws.

D—Unless otherwise provided for, the Executive Board shall select the time, duration and place for holding the annual meetings, and shall make necessary arrangements therefor.

E—The Executive Board shall pass upon the eligibility of all candidates for membership and report their recommendations to the association. Four members of the Executive Board shall constitute a quorum for the transaction of business.

F—The Executive Board shall act upon and report promptly on all recommendations of the President of the association and resolutions or other matters duly referred to them by the associations, or sections thereof.

G—On written request of at least one hundred members of the association through the Secretary, the Executive Board shall submit any question to the whole membership for decision by mail ballot. All ballots returned to the Secretary shall be signed by the active members voting and said ballots shall be retained by the Secretary for at least two years after they have been counted. All mail ballots on specific questions, nominations and elections shall be of the same date and issue. Ballots not signed, and ballots not returned within sixty days after date of issue, shall not be counted.

H—Accurate records shall be kept by the Secretary of the association of all meetings of the Executive Board.

I—A summary of such records shall be published in the proceedings and distributed to the members, except when the Executive Board deems it for the best interests of the association to temporarily withhold from such publication and distribution such records or any part thereof.

J—Itemized accounts of all disbursements, with the purpose thereof and records of votes shall never be withheld from publication.

K—The Executive Board shall have full discretion to withhold from the "Journal" in whole or in part any paper or part of proceedings that may be referred to the Board by the association or by the editor.

L—It shall be the duty of the Executive Board to consider and recommend yearly to the association concerning the selection of an Editor and Business Manager of the "Journal" of the American Veterinary Medical Association. The Editor and Business Manager of said "Journal" shall receive such salary and allowances as may be recommended by the Executive Board and approved by the association.

M—The Executive Board shall have the "Journal" accounts audited by a qualified accountant annually or oftener if deemed necessary, and submit annually to the association a financial statement including inventory.

N—The Executive Board shall be vested with power to hear all complaints filed before it in writing relative to the improper conduct of any member, and shall, if thought advisable, summon the member so charged to appear before it at the next annual meeting of the association, to answer the charges and make defense. If the Board find the defendant guilty as charged, said Executive Board shall report at once to the association a summary of the charges and evidence submitted on both sides, together with such recommendations as may be deemed wise; but no public report of such charges or evidence shall be made by the Board or any member thereof until after trial by the Executive Board.

Executive Board Districts

Section 8. There shall be six Executive Board Districts as follows:

District No. 1 shall consist of Canada.

District No. 2 shall consist of Pennsylvania, New York, the New England States, New Jersey and Delaware.

District No. 3 shall consist of Illinois, Ohio, Wisconsin, Michigan and Indiana.

District No. 4 shall consist of Kentucky, West Virginia, Virginia, Maryland, District of Columbia, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida, Cuba, South America.

District No. 5 shall consist of Alaska, Washington, Montana, North and South Dakota, Minnesota, Iowa, Nebraska, Wyoming, Idaho, Oregon, Philippines, and Hawaii.

District No. 6 shall consist of California, Nevada, Utah, Colorado, Kansas, Missouri, Arkansas, Oklahoma, Louisiana, Texas, New Mexico, Arizona, Mexico, and Central America.

Vacancies and Removals

Section 9. The President shall fill any vacancies in the Executive Board from the district in which such vacancy occurs, and said appointee shall hold office until a special election of the district may be held.

If a member of the Executive Board removes from his district, such removal shall automatically cause a vacancy.

Vacancies in the office of the Secretary or Treasurer shall be filled by appointment for the unexpired term by the President.

The Executive Board may, for dishonesty or incompetence, remove the Secretary or Treasurer from office upon approval of the President.

Executive Board Meetings

Section 10. The Executive Board shall hold its regular session at the time and place of the annual meeting of the association. Special meetings may be called by the Secretary upon written request of five members of the Executive Board.

Article VI

Any amendments to this Constitution shall be proposed in writing at an annual meeting and referred to the Executive Board for recommendation or otherwise; but such amendments shall not be acted upon until the next following annual meeting, nor shall they be adopted finally except by the votes of at least two-thirds of the members present and voting.

BY-LAWS.

Article 1.

Order of Business.

Section 1. The following shall be the order of business, except as otherwise provided:

1. Call to order by the President.
2. President's address.
3. Presentation and adoption of minutes.
4. Report of the Executive Board.
5. Admission of New Members.
6. Election of Officers.
7. Reports of Officers.
8. Reports of Committees.
9. Unfinished business.
10. New Business.
11. Installation of Officers.

Section 2. All meetings of the association shall be governed by Roberts' Rules of Order when not in conflict with the By-laws.

Article 2

Application for Membership

Section 1. Application for membership in the association shall be made on blank forms approved by the Executive Board. The applica-

tion blanks filled out and signed by the applicant in his own hand writing shall be mailed or delivered to the Secretary, who shall present the same to the Executive Board for consideration. An application to be considered must have been endorsed by two members in good standing, one of whom shall be a resident of his own state, and must be accompanied by the membership fee and one year's dues. If the applicant is a practitioner he shall have satisfied the legal requirements for practice in the state in which he resides.

Section 2. Except as provided in Sections 3, 4 and 5, of this Article, only those veterinarians may be admitted to active membership who have spent not less than three collegiate years in the study of veterinary medicine and have been duly graduated from an accredited veterinary college conforming to the requirements of regulations 1 to 19, inclusive, of the Bureau of Animal Industry Circular No. 150, as printed on pages 175 to 182 of the Proceedings of the forty-ninth annual meeting of the A. V. M. A., 1912.

Section 3. A graduate of a veterinary college which, at the time of his graduation, did not maintain an educational standard in conformity with the active membership requirements of this association, may upon recommendation of the Executive Board, be elected to membership, provided he has been duly graduated not less than five years prior to the date of application, and further, that the college has ceased to graduate veterinarians contrary to the standards now fixed by this association.

Section 4. Except as provided in Section 3, only those veterinarians may be elected to active membership who have been duly graduated from an approved veterinary college maintaining a course of instruction extending over four collegiate years of not less than thirty-two weeks each and of not less than seventeen credit hours per week, beginning with the session of 1919-20.

Section 5. Beginning with the collegiate year of 1919-20 the matriculation requirement shall not be less than four years of high school work or equivalent studies taken in other preparatory schools, provided that candidates for admission to approved veterinary schools who cannot present a satisfactory certificate from the proper official of the school or schools attended covering the required amount of preparatory work may be admitted upon passing satisfactory examinations approved by the proper state educational officers.

Section 6. All candidates for membership favorably reported to the association by the Executive Board, shall be balloted upon and a three-fourths vote in the applicant's favor will entitle him to active membership.

Article 3

Section 1. Notice of the time and place of holding the regular meeting shall be announced at least three months before the date fixed for the meeting.

Section 2. Notice of the time and place of holding a special or adjourned meeting shall be mailed to each active member at least twenty days before the date fixed for the meeting. No business shall be transacted at special meetings which was not clearly and definitely stated in the call convening such meeting.

Section 3. The general sessions of the association shall be held at 2:00 P. M. each day, except the first. On the first day of the annual meeting there shall be a session at 10:00 A. M.

The sections of the association shall hold their meetings at 9:00 A. M. each day, except the first day, when they shall convene at 2:00 P. M. Night sessions may be convened by consent of the membership of any section.

Article 4

Quorum

Section 1. Twenty-five per cent of the members of the association registered at any meeting shall constitute a quorum for the transaction of business.

Article 5

Dues

Section 1. There shall be an initiation fee of five dollars (\$5.00). The annual dues shall be five dollars (\$5.00), payable in advance on the first day of September. Honorary members shall pay no dues.

Article 6

Delinquency

Section 1. Any member who for two years fails to pay his annual dues shall forfeit his membership thirty days after notification from the Secretary has been mailed to his last known address.

After the first four months of such delinquency his name shall be stricken from the "Journal" mailing list.

Article 7

Reinstatement.

Section 1. A member who has forfeited his membership for non-payment of dues, may be reinstated upon payment of his entire indebtedness to the association.

Section 2. A member who loses his membership for a reason other than non-payment of dues may be reinstated only by application as in the case of new members.

Article 8

Nominations

Section 1. Nominations for office, except as otherwise provided for, shall be made orally. A nominating speech shall not exceed two minutes and the nominations shall not be closed until every member present has had an opportunity to present his candidate.

Article 9

Election of Officers

Section 1. A majority of all votes cast shall be necessary to elect. If no nominee receives a majority of the votes on the first ballot, the nominee who receives the lowest number of votes shall be dropped and a new ballot shall be taken, and so on until a nominee receives a majority.

Section 2. The officers of the association shall be elected at the afternoon session the second day of the annual meeting.

Article 10

Election of Members of Executive Board

Section 1. At least six months before the annual meeting, the Secretary of the association shall send to each member in that district a statement that a member of the Executive Board is to be elected and ask for a nomination to be sent to the Secretary at least four months before the annual meeting. The Secretary shall make a list of the names of the highest five, who shall constitute the nominees for membership of the Executive Board in that district. Each member of the district must send his ballot for the nominee of his choice to the Secretary two months before the annual meeting. The nominee shall be voted upon by mail ballot. A plurality only shall be necessary to a choice. In case of a tie the members from the district attending the annual meeting shall decide by ballot at a meeting of the members from the district called by the President.

The member at large shall be elected by ballot at the regular annual meeting.

Article 11

Installation

Section 1. The officers of the association shall assume their duties at the close of the annual meeting at which they are elected.

Article 12

Sections

Section 1. The association shall be divided into the following sections:

- A. General Practice.
- B. Sanitary Science and Police.
- C. Veterinary Colleges and Examining Boards.

The Executive Board may make additional sections as deemed expedient.

Section Officers

Section 2. The officers of each section shall consist of a chairman and a secretary. They shall be elected by the members of the section. They shall serve one year and until their successors are elected and have assumed office.

Chairman of Section

Section 3. The chairman shall preside at all meetings of the section and shall perform the usual duties belonging to such office. He shall co-operate with the secretary of the section in arranging the program and shall see that the proper arrangements have been made for the carrying out of the same.

Secretary of Section

Section 4. The secretary shall keep an accurate record of the proceedings of the section. He shall, in co-operation with the chairman,

arrange the program of the section for the annual meeting. He shall send the program to the Secretary of the association at least forty days before the annual meeting for insertion in the program of the association.

Length of Papers

Section 5. A maximum of twenty minutes will be allowed for the presentation of a paper, and five minutes for each speaker taking part in a discussion. The author will be allowed a reply to questions and criticisms at the end of the discussion.

Papers Read by Title

Section 6. No paper shall be published as having been read before a section unless it has actually been read, or unless the section shall vote to have it read by title.

Property in Papers

Section 7. All papers and reports of any nature presented to the association or to any section shall be the property of the association, if approved for publication. Consent from the Executive Board must first be obtained to permit the author of any paper to publish his paper prior to its publication in the official Journal.

Article 13

Editor and Business Manager

Section 1. The Editor and Business Manager, which positions may be held by the same individual, shall perform the usual duties of such positions in connection with the official organ of the association.

The Journal of the American Veterinary Medical Association shall publish the proceedings, transactions, papers, etc., and such other matters as the Editor may select.

Article 14

Invited Guests

Persons not eligible to membership in the association may be invited by any member to attend the annual meeting of the association or the meetings of a section.

Article 15

Registration

Section 1. No member may vote at a regular meeting until he has registered and paid his entire indebtedness to the association.

Article 16

Honorary Members

Section 1. Nominations for honorary membership shall be made in writing and submitted to the association not later than the second day of the annual meeting. An interval of at least twenty-four hours shall elapse between the nomination and the election.

Article 17

Standing Committees

Section 1. There shall be the following standing committees consisting of five members each except as otherwise provided:

1. Budget.
2. Intelligence and Education.
3. Legislation.
4. Necrology.
5. Resolution.
6. Audit.

The Committee on Budget shall consist of the President, Secretary, Treasurer and Chairman of the Executive Board. It shall be the duty of the committee to consider the financial resources of the association and proposed expenditures. The committee shall report its recommendations to the association for ratification before the close of the meeting.

The Committee on Intelligence and Education shall consist of five members to be appointed by the President to serve for a period of five years, except at the outset one member shall be appointed for a period of one year, one for two years, one for three years, one for four years, and one for five years. This committee shall elect annually its own chairman. It shall be the duty of the committee to report annually upon the progress and needs of veterinary education. It shall inspect veterinary colleges as it may deem necessary or as directed by the association; and shall annually recommend a list of veterinary colleges for recognition by the association.

The Committee on Legislation shall consist of five members to be appointed in the same way and for the same terms as the Committee on Intelligence and Education.

Article 18

Resident Secretaries

Section 1. Each state, territory, province or country may have a Resident Secretary appointed by the President.

Section 2. Each Resident Secretary shall co-operate with the Committee on Intelligence and Education and shall aid the President, Secretary and Editor of the Journal in such a manner as they may direct.

Article 19

Code of Ethics

Section 1. Members of this association are expected to conduct themselves at all times as professional gentlemen. Any flagrant violation of this principle shall be considered by this association as unprofessional conduct, and on written charges filed with the Executive Board, may subject the violator to suspension or expulsion as provided in Article 5, Section 7, of the Constitution.

Section 2. No member shall assume a title to which he has not a just claim.

Section 3. No member shall endeavor to build up a practice by undercharging another practitioner.

Section 4. In all cases of consultation it shall be the duty of the veterinary surgeon in attendance upon the case to give the opinion of the consulting veterinary surgeon (whether favorable to his own or otherwise) to the owner of the patient in the presence of all three. In case of the absence of the owner the veterinary surgeon consulted may, after giving his opinion to the attending veterinary surgeon, transmit it in writing to the owner through the medical attendant. It shall be deemed a breach of this code for a consulting veterinary surgeon to revisit a patient without a special invitation by the attending veterinary surgeon or agreement with him.

Section 5. In advertising the veterinary surgeon shall confine himself to his business address. Advertising specific medicines, specific plans of treatment, or advertising through the medium of posters, illustrated stationery, newspaper puffs, etc., will not be countenanced by this association.

Section 6. Any person who shall advertise or otherwise offer to the public any medicine, the composition of which he refuses to disclose, or who proposes to cure by secret medicines, shall be deemed unworthy of membership in this association.

Section 7. It shall be deemed a violation of the code of ethics for any member of this association to contract with or through the officers of any live stock insurance company for the professional treatment of the members' stock so insured; but this rule shall not prevent any member from becoming an examiner of risks and acting in the capacity of an expert for the same.

Section 8. Each member shall observe the code of ethics adopted by this association and be answerable to the Executive Board for any breach of the same.

Article 20

Amendment to By-Laws

Section 1. The By-Laws of this association may be amended at any annual meeting by the same procedure as provided for amending the Constitution.

Section 2. The By-Laws may be suspended temporarily by a vote of three-fourths majority, but such suspension shall not apply to Section 1, Article 1§, and Section 1, Article 20.

Section 3. Officers elected under the old Constitution and By-Laws shall constitute the first set of officers under the new organization in so far as provided for in the new Constitution and By-Laws.

Major C. E. Cotton, of Minneapolis, has been appointed state veterinarian of Minnesota to succeed the late Dr. S. H. Ward.

Dr. J. S. McIntyre, of Foam Lake, Sask., is taking a post-graduate course at the Ontario Veterinary College, Toronto.

MEETINGS OF THE ASSOCIATION.

1863. First Meeting, New York, N. Y., June 9 and 10.
1864. Semiannual (*comitia minora*)—New York, N. Y., Jan. 19.
Annual—New York, N. Y., September 6.
1865. Semiannual—New York, N. Y., March 7.
Annual—Boston, Mass., September 5.
1866. Semiannual—New York, N. Y., March 5 and 6.
Annual—New York, N. Y., September 4.
1867. Semiannual—Boston, Mass., March 5.
Annual—New York, N. Y., September 3.
1868. Semiannual—New York, N. Y., March 5.
Annual—Boston, Mass., September 1.
1869. Semiannual—Boston, Mass., March 16.
Annual—New York, N. Y., September 21.
1870. Semiannual—Philadelphia, Pa., March 15 (no quorum).
Annual—New York, N. Y., September 20.
1871. Semiannual—Boston, Mass., March 21.
Annual—New York, N. Y., September 19.
1872. Semiannual—Boston, Mass., March 16.
Annual—New York, N. Y., September 17.
1873. Semiannual—Boston, Mass., March 17.
Annual—New York, N. Y., September 16.
1874. Semiannual—Boston, Mass., March 17.
Annual—Not held, owing to error in date of notices sent out.
1875. Semiannual—Boston, Mass., March 25.
Annual—New York, N. Y., September 21.
1876. Semiannual—Boston, Mass., March 21.
Annual—New York, N. Y., September 10.
1877. Semiannual—Boston, Mass., March 20.
Annual—New York, N. Y., September 18.
1878. Semiannual—Boston, Mass., March 19.
Annual—New York, N. Y., September 17.
1879. Semiannual—Boston, Mass., March 18.
Annual—New York, N. Y., September 16.
1880. Semiannual—Boston, Mass., March 16.
Annual—New York, N. Y., September 1.
1881. Semiannual—Boston, Mass., March 13.
Annual—New York, N. Y., September 20.
1882. Semiannual—Boston, Mass., March 21.
Annual—New York, N. Y., September 19.
1883. Semiannual—Boston, Mass., March 20.
Annual—New York, N. Y., September 18.
1884. Semiannual—Boston, Mass., March 18.
Annual—Cincinnati, Ohio, September 16.
1885. Semiannual—Boston, Mass., March 17.
Annual—New York, N. Y., December 15.
1886. Semiannual—Boston, Mass. No legal meeting held (no quorum).
Annual—New York, N. Y., September 21.

1887. Semiannual—Philadelphia, Pa., March 15.
Annual—New York, N. Y., September 20.
1888. Semiannual—Baltimore, Md., March 20.
Annual—New York, N. Y., September 18.
1889. Semiannual—Boston, Mass., March 19.
Annual—Brooklyn, N. Y., September 17.
1890. Chicago, Ill., September 16 and 17.
1891. Washington, D. C., September 15 and 16.
1892. Boston, Mass., September 20, 21 and 22.
1893. Chicago, Ill., October 17, 18, 19 and 20.
1894. Philadelphia, Pa., September 18, 19 and 20.
1895. Des Moines, Iowa, September 10, 11 and 12.
1896. Buffalo, N. Y., September 1, 2 and 3.
1897. Nashville, Tenn., September 7, 8 and 9.
1898. Omaha, Neb., September 6, 7 and 8.
1899. New York, N. Y., September 5, 6 and 7.
1900. Detroit, Mich., September 4, 5 and 6.
1901. Atlantic City, N. J., September 3, 4 and 5.
1902. Minneapolis, Minn., September 2, 3 and 4.
1903. Ottawa, Canada, September 1, 2, 3 and 4.
1904. St. Louis, Mo., August 16, 17, 18 and 19.
1905. Cleveland, Ohio, August 15, 16, 17 and 18.
1906. New Haven, Conn., August 21, 22, 23 and 24.
1907. Kansas City, Mo., September 10, 11, 12 and 13.
1908. Philadelphia, Pa., September 8, 9, 10 and 11.
1909. Chicago, Ill., September 7, 8, 9 and 10.
1910. San Francisco, Cal., September 6, 7, 8 and 9.
1911. Toronto, Canada, August 21, 22, 23 and 24.
1912. Indianapolis, Ind., August 27, 28, 29 and 30.
1913. New York, N. Y., September 1, 2, 3, 4 and 5.
1914. No meeting.
1915. Oakland, Cal., August 30, 31, September 1 and 2.
1916. Detroit, Mich., August 21, 22, 23, 24 and 25.
1917. Kansas City, Mo., August 20, 21, 22, 23 and 24.
1918. Philadelphia, Pa., August 19, 20, 21 and 22.

PRESIDENTS.

- 1863-1864. J. H. Stickney, Massachusetts.
- 1864-1865. A. S. Copeman, New York.
- 1865-1866. C. M. Wood, Massachusetts.
- 1866-1867. R. H. Curtis, New York.
- 1867-1869. R. Wood, Massachusetts.
- 1869-1871. E. F. Thayer, Massachusetts.
- 1871-1875. A. Large, New York.
- 1875-1877. A. Liautard, New York.
- 1877-1879. C. P. Lyman, Massachusetts.
- 1879-1881. J. L. Robertson, New York.
- 1881-1883. W. Bryden, Massachusetts.
- 1883-1885. W. B. E. Miller, New Jersey.

- 1885-1886. L. McLean, New York.
 1886-1887. A. Liautard, New York.
 1887-1889. R. S. Huidekoper, Pennsylvania.
 1889-1890. C. B. Michener, New York.
 1890-1892. R. S. Huidekoper, Pennsylvania.
 1892-1893. W. L. Williams, Indiana.
 1893-1896. W. Horace Hoskins, Pennsylvania.
 1896-1897. F. H. Osgood, Massachusetts.
 1897-1898. D. E. Salmon, District of Columbia.
 1898-1899. A. W. Clement, Maryland.
 1899-1900. Leonard Pearson, Pennsylvania.
 1900-1901. Tait Butler, Indiana.
 1901-1902. J. F. Winchester, Massachusetts.
 1902-1903. S. Stewart, Missouri.
 1903-1904. R. R. Bell, New York.
 1904-1905. M. E. Knowles, Montana.
 1905-1906. W. H. Lowe, New Jersey.
 1906-1907. James Law, New York.
 1907-1908. W. H. Dalrymple, Louisiana.
 1908-1909. J. G. Rutherford, Ontario, Can.
 1909-1910. A. D. Melvin, District of Columbia.
 1910-1911. G. H. Glover, Colorado.
 1911-1912. S. Brenton, Michigan.
 1912-1913. J. R. Mohler, District of Columbia.
 1913-1915. C. J. Marshall, Pennsylvania.
 1915-1916. R. A. Archibald, California.
 1916-1917. C. E. Cotton, Minnesota.
 1917-1918. F. Torrance, Ottawa, Canada.
 1918-1919. V. A. Moore, New York, N. Y.

SECRETARIES.

1863. A. Liautard, New York.
 1864. R. Jennings, New York.
 1865-1867. C. Burden, New York.
 1867-1869. J. F. Budd, New York.
 1869-1874. J. L. Robertson, New York.
 1874-1877. J. D. Hopkins, New Jersey.
 1877-1880. A. A. Holcomb, New York.
 1880-1888. C. B. Michener, New York.
 1888-1893. W. Horace Hoskins, Pennsylvania.
 1893-1894. T. J. Turner, Missouri.
 1894-1895. Leonard Pearson, Pennsylvania.
 1895-1902. S. Stewart, Kansas and Missouri.
 1902-1906. John J. Repp, Iowa and Pennsylvania.
 1906-1910. Richard P. Lyman, Connecticut and Missouri.
 1910-1913. C. J. Marshall, Pennsylvania.
 1913-1915. Nelson S. Mayo, Illinois.
 1915-1916. C. M. Haring, California.
 1916-1917. L. A. Merillat, Illinois.
 1917-1918. L. Enos Day, Illinois (Acting Secretary).
 1918-1919. N. S. Mayo, Illinois.

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DIRECTORY OF MEMBERS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

(December, 1918.)

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- Adami, J. George, Montreal, Quebec.
Bang, Prof. Dr. B., Royal Vet. College, Copenhagen, Denmark.
Bayard, E. S., Pittsburgh, Pa.
Biggs, Prof. H. M., 23 W. 45th St., New York, N. Y.
Dorset, Marion, Bio Chemie Div., B. A. I., Washington, D. C.
Evans, W. A., 906 Tribune Bldg., Chicago, Ill.
Ferguson, Jno. J., Chicago, Ill.
Hay, Hon. James, House of Representatives, Washington, D. C.
Hoare, E. Wallis, 18 Cook St., Cork, Ireland.
Hobday, Prof. Frederick, 165 Church St., Kensington, W., London, England.
Hutya, Prof. Francis, Royal Veterinary High School, Budapest, Hungary.
Lavalard, E., 87 Avenue de Valiers, Paris, France.
LeClainche, Prof. E., Toulouse, France.
McEachran, D., 6 Union Ave., Montreal, Quebec.
McFadyean, Prof. Sir John, Great College, St. Camden Town, London, England.
Moller, Herr Prof. H., Thierärztlichen, Hochschule, Berlin, Germany.
Ostertag, Prof. Robert, Imperial Board of Health, Berlin, Germany.
Perroncito, Prof. E., Royal Veterinary College, Turin, Italy.
Ransom, B. H., Bureau of Animal Industry, Washington, D. C.
Ravenel, Mazyck P., University of Missouri, Columbia, Mo.
Raymond, J. H., Bolhemus Memorial Clinic, Brooklyn, N. Y.
Schmidt, Mr. I., Kolding, Denmark.
Smith, Prof. Theobald, Rockefeller Institute, Princeton, N. J.
Stockman, Sir Stewart, Board of Agriculture, London, England.
Tsuno, Dr. K., Vet. Dept., Imperial Univ., Tokio, Japan.
Vallée, H., Alfort, France.
Welch, W. H., Johns Hopkins University, Baltimore, Md.
Wilcox, E. V., Dept. of Agriculture, Honolulu, Hawaii.
Woodward, William C., City Hall Annex, Boston, Mass.

ACTIVE MEMBERS.

- Abbott, Andrew J., 209 E. 4th St., Marshfield, Wis.
Abel, George C., Scott City, Kans.
Abendshein, Arthur Paul, 1218 29th St., Des Moines, Iowa.
Abercombie, Henry E., Cambridge, Ill.
Abernethy, Pascal M., Box 205, Monroe, N. C.

- Abraham, Robert Sumerlee, 88 City Councillors St., Montreal, Quebec, Canada.
- Achen, F. W. B., 118 Market St., Kenosha, Wis.
- Ackerman, E. B., 215 Washington St., Brooklyn, N. Y.
- Ackerson, J. L., Milan, Mich.
- Aces, George Henry, Grand Forks, B. C.
- Adair, Hugh H., 111 Water St., Bristol, Va.
- Adams, Franklin, 224 W. Washington St., Paris, Ill.
- Adams, John Dawson, Moscow, Idaho.
- Adams, John William, 39th and Woodland Ave., Philadelphia, Pa.
- Adamson, Lt. Geo. V., Veterinary Training School, Camp Lee, Virginia.
- Agin, Lt. Burroughs, Co. 28, Bn. 7, Camp Greenleaf, Ga.
- Ahlers, F. R., Lamotte, Iowa.
- Ahnert, Ernest F., c/o Bureau of Animal Industry, San Francisco, Cal.
- Aikenhead, J. P., Easton, Md.
- Ainsworth, F. W., 225 East Clay St., Lancaster, Pa.
- Aitken, William Alexander, 23d Cavalry, F. A., Ft. Oglethorpe, Georgia.
- Albright, Wm., 26th F. A., 9th Div., Camp McClellan, Ala.
- Alcorn, Harvey Alex, Adair, Iowa.
- Aldrich, Ellen M., Grove City, Pa.
- Alexander, E. V., 3309 Park Ave., Indianapolis, Ind.
- Alford, Simon Wayne, Fremont, Neb.
- Allen, Dee Loyd, Auburn, Ala.
- Allen, Frank E., 4201 Berkeley Ave., Chicago, Ill.
- Allen, Geo. H., B. A. I., South St. Joseph, Mo.
- Allen, Joseph Alexander, 20 Pansy Ave., Ottawa, Ont., Canada.
- Allen, Lt. I. H., Box 732, Camp Greenleaf, Ga.
- Allen, L. J., 1604 Ellison St., Oklahoma City, Okla.
- Allen, Rollin M., 412 N. 1st St., Marshalltown, Iowa.
- Allen, Stanley W., 115 1st St., Watertown, S. D.
- Allison, Thos. R., P. O. Box 218, Winfield, Kans.
- Allott, Lt. Alfred James, 9th Train. Hdqrs. M. P., Camp Sheridan, Ala.
- Almeida, Anton R., Dixon, Cal.
- Althouse, E. P., 809 Market St., Sunbury, Pa.
- Alvey, Walter C., 3715 Metropolitan Ave., Kansas City, Kans.
- Ambler, H. B., Chatham, N. Y.
- Ames, Cyrus H., Parker, Colo.
- Amling, Henry, 4228 Park Ave., New York City, N. Y.
- Anders, Thos. O., c/o Health and San., Public Safety Building, Seattle, Wash.
- Anderson, Alex R., 742 Kennedy Ave., Johnstown, Pa.
- Anderson, Carl C., Box 435, St. James, Minn.
- Anderson, F. E., 130 E. Crawford St., Findlay, Ohio.
- Anderson, George Guild, 417 W. 49th St., New York City, N. Y.
- Anderson, Herbert, Dickinson, N. D.

- Anderson, J. E., Angola, Ind.
Anderson, J. S., Seward, Neb.
Anderson, Leo, Cedarville, Ohio.
Anderson, Leo J., 2nd Lt., 115 Field Signal Bn., A. E. F., France.
Anderson, Melancthon O., 408 Exchange Bldg., S. St. Paul, Minn.
Anderson, Oscar W., Brunswick, Neb.
Anderson, Thos. E., Bedford, Iowa.
Anderson, Wm. A., Sleepy Eye, Minn.
Andrade, John R., Huntsville, Ala.
Andreassen, S. K., Lt., A. R. D. No. 331, Camp Lewis, American Lake, Wash.
Address, W. R., 1128 Wagner Ave., Philadelphia, Pa.
Andrews, Frederick W., P. O. Box 655, Mt. Kisco, N. Y.
Aufente, John R., Chipley, Fla.
Annand, J. G., 1131½ S. First St., Duluth, Minn.
Anthony, C. H., 2 E. 4th St., Oklahoma City, Okla.
Arbeiter, R., Marion, S. D.
Arburna, Joseph M., Lt., Hdqrs. 8th Div., Camp Fremont, Cal.
Archibald, R. A., N. E. cor. 24th and Broadway, Oakland, Cal.
Armour, Henry M., Chelsea, Mich.
Armour, W. J., 114 S. Third St., Goshen, Ind.
Armstrong, Fred R., 48 Centre St., Montreal, Quebec, Canada.
Armstrong, James, 908 Royal Bank Bldg., Toronto, Ontario.
Armstrong, J. M., 15 First St., E. Providence, R. I.
Armstrong, Robert, 641 Field Ave., Detroit, Mich.
Armstrong, Walter N., Concord, Mich.
Arndt, Herman F., 3953 Michigan Ave., Chicago, Ill.
Arnold, Ira H., A. R. D., Camp Meade, Md.
Arnold, John Fletcher, Lt., 80th F. A., Camp Merritt, N. J.
Arnold, J. W., 777 W. 10th St., Riverside, Cal.
Arnold, T. F., 5077 Vernon Ave., St. Louis, Mo.
Arzberger, W. A., Watertown, Wis.
Ash, Lt. Harley E., Weston, Ohio.
Ash, John James, 28 Liberty St., Binghamton, N. Y.
Ashbaugh, Frederick M., 1833 Monroe St., Washington, D. C.
Ashby, Lt. Jesse O., Co. 28, Bn. 7, Camp Greenleaf, Ga.
Ashcraft, Watt, 310 Hoyne St., Monroe, N. C.
Atherton, Ira H., Md. Agri. College, College Park, Md.
Atkins, Chas. Edw. C., 209 John St., Bridgeport, Conn.
Atkins, Wm. R., 7540 Green St., Chicago, Ill.
Augspurger, O., 224 E. Oak St., Louisville, Ky.
Aulgar, H. W. B., Buckley, Ill.
Aull, R. H., 29 E. 6th St., Dayton, Ohio.
Austin, Jas. A., 137 F. A., 38th Div. Med. Dept., A. E. F., France.
Avant, Roy, Remount Depot, Camp Sevier, S. C.
Axby, William A., Harrison, Ohio.
Axten, E. B., Brewster, Minn.
Ayer, Hobart C., Albany, Ala.
Ayers, Admiral Taw, 1966 Kalein Ave., Louisville, Ky.
Ayers, H. Wood, 1011 Hale St., Oklahoma City, Okla.
Aymond, Sidney Clay, Bunkie, La.

- Babb, Geo. F., 310 Federal Bldg., Oklahoma City, Okla.
Babbitt, Frank J., 49 Atkins Ave., E. Lynn, Mass.
Babcock, Chas. H., New Rockford, N. D.
Babson, Elmer W., 341 Washington St., Gloucester, Mass.
Bach, Glenn R., Co. 45, Bn. 12, Camp Greenleaf, Ga.
Bachelor, W. E., Box 315, Douglass, Ga.
Baekus, Newell D., 345 W. 2nd St., Elyria, Ohio.
Backus, L. S., Columbia, Mo.
Baddeley, Joseph C., Athena, Oregon.
Bailey, Alfred L., 23 Federal Bldg., Kansas City, Kans.
Bailey, Clyde D., 207 Madison St., W., Washington, Iowa
Bailey, Hugh W., Orion, Ill.
Bailey, Leon L., Lowell, Ind.
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Wilkins, Lt. W. L., Co. 29, Bn. 7, Camp Greenleaf, Ga.
Wilkinson, H. D., Tomo River, N. J.
Wilkinson, J. A., Lufkin, Tex.
Williamson, M. A., 1406 N. Houston St., Ft. Worth, Tex.
Will, Evan J., Harrisonburg, Va.
Willett, F. C., Henry, Ill.
Wiley, Louis E., Station A, Ames, Iowa.
Williams, Lt. Douglass K., Co. 29, Bn. 7, Camp Greenleaf, Ga.
Williams, Lt. E. E., Eclectic, Ala.
Williams, G. M., 611 College St., Boone, Iowa.
Williams, M. J., Lewisville, Ark.
Williams, Nicholes F., c/o Kansas Blackleg Serum Co., Amarillo, Tex.
Williams, R. E., Aztec, N. M.
Williams, W. L., N. Y. State Vet. Col., Ithaca, N. Y.
Williams, Walter W., 411 Broadway, Utica, N. Y.
Williamson, W. L., 1618 2nd Ave., Cedar Rapids, Iowa.
Willis, H. W., c/o A. C. College, Logan, Utah.
Willmot, Chas., Chickasha, Okla.
Willmot, Dan, Chickasha, Okla.
Willmot, John, Chickasha, Okla.
Wills, J. G., 27 Matilda St., Albany, N. Y.
Willson, Louis A., 1 Common St., Montreal, Quebec.
Willyoung, L. E., 86 Mariner St., Buffalo, N. Y.
Wilson, A. F., Carmangay, Alberta.
Wilson, A. M., Wheatly, Ontario.
Wilson, Lt. C. B., Co. 30, Bn. 7, Camp Greenleaf, Ga.

- Wilson, Charles P., Decorah, Iowa.
Wilson, C. P., 113 S. State St., Greenfield, Ind.
Wilson, Don R., 42nd and Halsted St., Drovers Bank Bldg., Chicago, Ill.
Wilson, E. L., Eufaula, Okla.
Wilson, F. M., Mechanicsville, Iowa.
Wilson, F. O., 314 Madison, Greenbay, Wis.
Wilson, G. A., Scottdale, Pa.
Wilson, Howard C., 187 Montgomery St., Troy, Ala.
Wilson, Lt. H. W., Gilman, Ill.
Wilson, I. D., State College, Pa.
Wilson, J. T., Hampton, Va.
Wilson, J. M., Winfield, Iowa.
Wilson, J. O., c/o Locke Hotel, Pierre, S. D.
Wilson, Lee A., Taylors Falls, Minn.
Wilson, R. H., c/o Parke-Davis Co., Rochester, Mich.
Wilson, R. O., Dunseith, N. D.
Wilson, W. S., Bowman, N. D.
Wimseth, O. K., Shelton, Neb.
Winchester, J. T., Lawrence, Mass.
Wing, C. C., 605 City Hall, Oakland, Cal.
Wing, Casper L., Van Wert, Iowa.
Winnes, Calvin, c/o Rath Pkg. Co., Waterloo, Iowa.
Winsloe, J. A. H., Assist. State Vet., Cooperstown, N. D.
Winslow, C., Rockland, Mass.
Winslow, J. H., La Moure, N. D.
Winstanley, J. H., 119 S. 37th, Philadelphia, Pa.
Winter, H. E., 132 E. 2nd St., Plainfield, N. J.
Winter, Jno. H., A. C. 24, Douglass, Ariz.
Winters, O. W., Arthur, Ill.
Winters, Raymond, 79 Steel St., Auburn, N. Y.
Wintringham, Lt. H. B., 301st Cav., U. S. A., Monterey, Cal.
Wipf, J. D. C., Belgrade, Mont.
Wirt, F. G., Box 4, Thibodaux, La.
Wirthlin, J. R., 4335 Emerald Ave., Chicago, Ill.
Wise, Wm. F., 246 N. Liberty St., Medina, Ohio.
Wiseman, W., Delphos, Kans.
Wishard, C. S., Arabi, La.
Wisner, Scott B. S., Omega, Neb.
Witle, Charles R., 852 E St., New Britain, Conn.
Witmer, H. W., Ft. Pierce, Fla.
Woelk, W. R., 1005 Washington Ave., Alpena, Mich.
Wolcott, Lery B., Shelton, Neb.
Wolcott, W. A., 713 E. Johnson St., Madison, Wis.
Wolf, O. O., W. 7th St., Ottawa, Kans.
Wolfe, Lt. Wm. R., Bessemer City, N. C.
Wolma, F. J., 602 Deep Eddy Ave., Austin, Tex.
Wood, A. L., Hampton, Iowa.
Wood, Lt. Chester E., Office of Post Vet., Corozal, Canal Zone.
Wood, Emlen, Div. Vet. Hdqrs., 28th Div., A. P. O. 744, A. E. F., France.

- Wood, F. W., c/o Cutters Laboratory, Berkeley, Cal.
Wood, Harley B., 19th Trs. Hdqrs. and M. P., Camp Dodge, Iowa.
Wood, John W., 411 N. 12th St., Kansas City, Kans.
Wood, R. E., Rockville, Ind.
Wood, Wm. Roy, 167 Commissioner St., West Montreal, Que.
Woodliffe, M. J., 637 E. 20th Ave., Denver, Col.
Woodring, F. R., 402 9th St., Chillicothe, Mo.
Woods, Lt. C. W., Co. 29, Bn. 7, Camp Greenleaf, Ga.
Woodside, James H., Redmond, Wash.
Woolard, C. L., Benton, Ill.
Wolf, F. P., Board of Health, Mobile, Ala.
Woolfolk, G. H., 524 W. Norwegian St., Pottsville, Pa.
Woolsoncroft, G. V., Cissna Park, Ill.
Wooters, Lt. H. S., c/o Div. Vet., Camp Logan, Tex.
Woolton, Wm. C., 2650 Main St., Buffalo, N. Y.
Word, Neil E., c/o J. P. Squire & Co., Cambridge, Mass.
Workman, L. F., Citronell, Ala.
Worley, E. R., Ashland, Neb.
Worms, A. C., 2932 Broadway, Chicago, Ill.
Worrell, George, Bn. 7, Camp Greenleaf, Ga.
Worsham, Ivel C., Wagon Co. 301, Jeffersonville, Ind.
Wright, Charles H., 3017 Cherry St., Kansas City, Mo.
Wright, Carlton J., Cerro Gordo, Ill.
Wright, Chas. C., 1819 W. 39th St., Depot Q. M., Chicago, Ill.
Wright, D. E., Colfax, Cal.
Wright, H. K., Glenolden, Pa.
Wright, J. B., Live Stock Exch., S. St. Joseph, Mo.
Wright, L. A., Water St., Columbus, Wis.
Wright, L. H., University of Nevada, Reno, Nev.
Wright, W. D., 1701 Ressequil St., Boise, Idaho.
Wurm, J. E., Pigeon, Mich.
Wyatt, D. Henry, Santa Paula, Cal.
Wyatt, Lt. James, Springfield, S. C.
Wyland, F. E., Terrill, Iowa.
Yager, E. P., B. A. I., Atlanta, Ga.
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Yenner, B. H., Ottumwa, Iowa.
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Yocom, Lt. E. J., Co. 30, Bn. 7, Camp Greenleaf, Ga.
Yoder, J. H., Monroe, La.
Yoder, E. C., 268 Armstrong Ave., Jersey City, N. J.
Yonkerman, D. P., B. A. I. Office, Sioux Falls, S. D.
York, C. H., Box 935, Columbus, Ohio.
Yost, Lt. H. R., Somerset, Ohio.
Young, Lt. Charles H., c/o Post Vet., Newport News, Va.
Young, C. J., 3814 S. 27th St., Omaha, Neb.
Young, F. A., Delphos, Ohio.
Young, George D., 9945 S. Irving Ave., Chicago, Ill.
Young, G. R., 4213 Center St., Omaha, Neb.
Young, H., 515 N. Charles St., Baltimore, Md.

Young, John M., 419 6th St., Brooklyn, N. Y.
Young, J. P., Le Roy, W. Va.
Young, Wm. A., P. O. Box 193, Prospect, N. Y.
Youngberg, Stanton, B. of Agric., Manilla, P. I.
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Zecha, J. R., Ellinwood, Kans.
Zecha, John Lewis, Edgemont Station, E. St. Louis, Ill.
Zell, Charles A., 523 Greenleaf Ave., Wilmette, Ill.
Zeltzer, Joseph E., 13 Tirwood Ave., Detroit, Mich.
Zickendrath, E. G., 101 Middlefield Road, Palo Alto, Cal.
Zimmerman, Israel, B. A. I., Springfield, Mass.
Zimmerman, Jas. A., 116 Massachusetts Ave., St. Joseph, Mo.
Zumwalt, A. R., 4428 S. 22nd St., Omaha, Neb.

NECROLOGICAL.

DR. W. L. STICKEL.

Dr. W. L. Stickel, a graduate of the San Francisco Veterinary College in 1913, died at Etna Mills, Cal., on December 7, of pneumonia. Dr. Stickel joined the A. V. M. A. in 1915. He leaves a widow and a seven-month-old baby.

DR. E. P. WOOD.

Dr. E. P. Wood, Charlottesville, Va., died recently from pneumonia following an attack of influenza. Dr. Wood received his early education in the public schools of Albemarle. He received his B. S. degree at the Virginia Polytechnic Institute, Blacksburg, was a graduate of the U. S. College of Veterinary Surgeons, Washington, D. C., and was licensed to practice in Virginia, North Carolina and the District of Columbia. Dr. Wood was a member of the A. M. V. A., having joined in 1915. He is survived by his mother and two sons—Col. T. Gilbert Wood, of Roanoke, Va., and Dr. Hugh Wood, of Greensboro, N. C.

DR. CLINTON BUDD PALMER.

Dr. Clinton Budd Palmer died October 19, 1918, at his home at Easton, Pa., from pneumonia, following an attack of influenza.

Dr. Palmer was forty years of age and was born at Moosehead, Luzerne County, Pa. He was a graduate of Stroudsburg,

Pa., High School and of the Chicago Veterinary College, class of 1911. Prior to locating at Easton, he practiced a short time in New York City.

He was successful from the start, and in connection with his practice he established a hospital for animals in a building adjoining his home. He was noted for his kindness to animals and in treating them always showed the greatest interest and did all in his power to afford relief. Many Eastonians, on leaving the city, were in the habit of leaving their pets in his charge.

Dr. Palmer is survived by his wife and two children, Alice and Clinton B. Palmer, Jr. A. Mitchell Palmer, Alien Property Custodian, of Washington, D. C., was a brother.

He was a member of the following organizations: American Veterinary Medical Association, and a few days before his death was appointed to the Legislative Committee for a term of five years; the Pennsylvania State Veterinary Medical Association, and a member of the Executive Committee; the Easton Rotary Club, and took a great interest in that organization; Easton Board of Trade, and a director of the S. P. C. A. He was an Alpha Psi man, Gamma Chapter. He was also a member and took an active interest in the Society of Friends of Stroudsburg

DR. H. A. GREER.

Dr. H. A. Greer of Danville, Ill., died of cerebral hemorrhage on December 27. Dr. Greer was educated at the University of Illinois and was a graduate of the Chicago Veterinary College. He was admitted into membership in the A. V. M. A. in 1917. He was president of the Illinois State Veterinary Association for the past year and was one of the prominent progressive veterinarians in the state of Illinois. His death was a severe loss to the profession, not only in Illinois, but to the country as a whole.

DR. REID.

Dr. Reid, of the firm of Sweet & Reid, Exeter, Ontario, died recently as the result of influenza. Dr. Reid graduated from the Ontario Veterinary College about three and a half years ago. He was extremely popular and had a bright future before him. The Doctor was a little over twenty-nine years of age, and a native of Nova Scotia.

REVIEW.

The Anatomy of the Domestic Fowl. By B. F. Kaupp, M. S., D. V. M., Poultry Investigator and Pathologist in the North Carolina Station, State Department of Agriculture, and the State College of Agriculture. 12mo of 373 pages with 84 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth \$3.00 net.

While the author's foreword notifies reviewers that no critical reviews are allowed, it seems that constructive personal suggestions are welcomed.

The author is to be congratulated upon the completion of his laborious task and for his attempts to fill "the demand for a textbook on the Anatomy of the Domestic Fowl."

The subdivision and arrangement of the text are logical and admirable but:

1. The descriptions are general, often vague, and lack the precision that an anatomist would use. Space does not permit the many citations that may be given, but the following examples will illustrate some of the deficiencies:

On pages 23 and 24 in the description of the cranial cavity no mention is made of its shape and no demarcation boundaries of the subdivisions are given, and we read, "The posterior wall of the cerebellum is formed by the occipital bone," "The walls are marked by digitations and vascular groove." The word "digitations" is evidently used to mean "digital impressions"—two very different things in anatomical language.

Page 149. "Openings of simple intestinal tubular glands the duodenal glands, or the glands formerly known as Brunner's glands are located between the villi."

Aside from lymphoid tissue the vertebrate intestine may contain:

A. Intestinal glands (Lieuerkühn's glands or crypts) above the muscularis mucosa.

B. Duodenal glands (Brunner's glands) perforating and mostly below the muscularis mucosa.

The duodenal glands are absent in the chicken.

2. The figures cover a wide range and in that respect are complete, but lack definition and clearness to such an extent that most of them are practically useless for instructional purposes.

The publishers deserve much credit for their publication of this needed text. A good quality of paper and readable type are

used, but the figures are much below their standard as set, for example, in Sisson's Anatomy of the Domestic Animals.

3. It is regrettable that the nomenclature used does not correspond more closely to that of the "BNA" (Basle Nomina Anatomica).

We hope that the agricultural students for whom this text is evidently written (Foreword) will soon exhaust the first edition and that the second may more nearly meet the requirement of veterinarians, students and research workers. H. S. M.

The announcement has been received of the marriage of Dr. R. L. Brinkman and Miss Marian Van Landingham on Sunday, December 22, 1918, at Cairo, Ga.

Wilmington, N, C
January, 3, 1919.

SeCt. Off, State

Dear, Sir, Will. You. Bee Kind. A, Nuff
To, Send, A. Form, Off, Veteary, Licens
For, Dr, Horses, And, Cows If, It, Is,
Neseary, To, Furnish Refornee, I, Do, So,
By, The, Best, Off, The, Country

Leet, Hear, From, You, As, Soone, As
Can, Please And, Oh, Blige, 'Respectfully
Yourse,

J, D, Sidbury
213, Mears, S,T
Wilmington, N,C,

The foregoing is a true copy of an application for license to practice veterinary medicine in the State of North Carolina.

Captain Otis A. Longley of California, recently on the staff of instructors at Camp Greenleaf, was a visitor to the New York City Association at its January meeting.

Captain H. Ticehurst of New Jersey, recently Division Veterinarian at Camp Sheridan, Ala., has been released from the service and returned to practice at Morsemere, N. J. In January Captain Ticehurst addressed the annual meeting of the New Jersey State Veterinary Medical Association.

Lieutenant W. W. Yard of Denver, Col., who, after finishing his training at Camp Greenleaf, was transferred to Camp Lee, was later sent "over the seas" to the A. E. F.

President Cochran of the New York City Veterinary Medical Society gave a timely address at the January meeting of the body.

Dr. Chas. H. Higgins, for many years attached to the government veterinary staff of Canada, has recently settled in New York. Dr. Higgins gave a wonderfully interesting address at the New York City Veterinary Medical Society in January on the development of veterinary medicine in Canada.

President Moore, Treasurer Jacobs, Chairman Hoskins, T. E. Munce and S. J. Walkley, of the Legislation Committee; Dr. Peter Bahnsen, of Georgia; Dr. Cassius M. Way, of New York; Dr. J. A. Kiernan, of the B. A. I. organization, and Chief John R. Mohler appeared before the House Committee on Agriculture at Washington on January 15, 1919, to urge increased compensation of the B. A. I. veterinarians and inspectors.

VETERINARY MEDICAL ASSOCIATION MEETINGS

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list:

Name of Organization	Date of Next Meeting	Place of Meeting	Name and Address of Sec'y
Alabama Vet. Med. Ass'n.....	Feb. 20-22, 1919...	Birmingham.....	C. A. Cary, Auburn
Alumni Ass'n College of Vet. Med. O. S. U.....		Columbus.....	W. R. Hobbs, care O. S. U., Columbus, Ohio
Alumni Ass'n N. Y.-A. V. C.....		338 E. 26th St.....	Jos. A. DeGroodt, Mendham, N. J.
Alumni Ass'n U. S. Coll. Vet. Surgeons.....		Wash., D. C.....	
American V. M. Ass'n.....	Begins Oct. 13, '19	New Orleans.....	N. S. Mayo. 4753 Ravenswood Ave., Chicago
Arkansas Veterinary Ass'n.....			R. M. Gow, Little Rock
B. A. I. Vet. Ass'n of Iowa.....	Jan., 1919.....	Ames, Ia.....	F. Jelen, Cedar Rapids, Ia.
B. A. I. Vet. In. A., S. Omaha.....	3d Mon. each mo.....	S. Omaha, Neb.....	J. V. Giffey, So. Side, Omaha
British Columbia Vet. Ass'n.....			K. Chester, New Westminster, B. C.
California State V. M. Ass'n.....			F. M. Hayes, Davis
Central Canada V. Ass'n.....			A. B. Wickware, Ottawa
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego
Chicago Vet. Society.....	2d Tu. each mo.....	Chicago.....	A. A. Leibold, Chicago
Colorado State V. M. Ass'n.....	January 21, 1919	Denver.....	I. E. Newsom, Ft. Collins
Conestoga Veterinary Club.....	2d Thu. each mo.....	Lancaster, Pa.....	H. B. Brady, Sec'y
Connecticut V. M. Ass'n.....			A. T. Gilyard, Waterbury
Dominion Vet. Meat Inspectors' Ass'n of Canada.....	3d Sat. each mo.....	Toronto.....	T. E. H. Fisher, Toronto
Genesee Valley V. M. Ass'n.....	2d week in Jan.....	Rochester.....	J. H. Taylor, Henrietta, N. Y.
Georgia State V. M. A.....			P. F. Bahnsen, Americus
Hudson Valley V. M. A.....			W. H. Kelly, Albany
Idaho Ass'n Vet. graduates.....			C. V. Williams, Blackfoot
Illmo Vet. Med. Ass'n.....			L. B. Michael, Collinsville, Ill
Illinois State V. M. Ass'n.....			L. A. Merillat, Chicago
Indiana Veterinary Ass'n.....			G. H. Roberts, Indianapolis
Iowa Veterinary Ass'n.....	Jan. 22-23-24, '19	Ames.....	H. D. Bergman, Ames
Kansas State V. M. Ass'n.....			J. H. Burt, Manhattan
Kentucky V. M. Ass'n.....	July 10, 11.....	Shelbyville.....	D. E. Westmoreland, Owensboro
Keystone V. M. Ass'n.....	2d Tu. each mo.....	Philadelphia.....	C. S. Rockwell
Louisiana State V. M. Ass'n.....		Portland.....	E. E. Russell, Farmington
Maine Vet. Med. Ass'n.....		Quincy House Boston.....	
Massachusetts Vet. Ass'n.....	Monthly.....		W. A. Ewalt, Mt. Clemens
Michigan State V. M. Ass'n.....			G. Ed. Leech, Winona
Minnesota State V. M. Ass'n.....			J. A. Beavers, Canton
Mississippi State V. M. Ass'n.....			R. F. Bourne, Ft. Collins, Col.
Missouri Valley V. Ass'n.....	Feb. 11, 12, 13, '19	Kansas City, Mo.....	Chas. D. Folse, Kansas City
Missouri Vet. Med. Ass'n.....			A. D. Knowles, Missoula
Montana State V. M. A.....			S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nat'l Ass'n B.A.I. Veterinarians.....	Meet with A. V. M. A.....		S. W. Alfort, Lincoln
Neb. Vet. Med. Ass'n.....	July 24-26.....	Ithaca, N. Y.....	C. E. Hayden, Ithaca
New York S. V. M. Society.....			J. P. Spoon, Burlington
North Carolina V. M. Ass'n.....			W. J. Mulroony, Havana
North Dakota V. M. Ass'n.....			C. E. Hershey, Tiffin, O'
North-Western Ohio V. M. A.....			R. I. Bernath, Wauseon
Ohio State V. M. Ass'n.....			Dr. W. R. Lukens, Hillsboro
Ohio Tri-County Vet. Ass'n.....			C. S. Henry, Terre Haute
Ohio Valley Vet. Med. Ass'n.....			W. P. Shuler, Stillwater
Oklahoma State V. M. Ass'n.....		Oklahoma City.....	B. T. Simms, Corvallis, Ore
Oregon Vet. Med. Ass'n.....	Jan. 22, 23, 1919	Harrisburg.....	T. E. Munce, Harrisburg
Pennsylvania State V. M. A.....	4h Tu. each mo.....	Portland, Ore.....	Sam. B. Foster, Portland, Ore.
Portland Vet. Med. Ass'n.....	Sept. 4, 5.....	Columbia, S. C.....	B. K. McInnes, Charleston
S. Carolina Ass'n of Veter'ns.....		Reading.....	C. R. Potteiger, Reading
Schuykill Valley V. M. A.....			S. W. Allen Watertown
South Dakota V. M. A.....	3d. Wed. Dec., Mar., June, Sept.	Los Angeles.....	J. A. Dell, Los Angeles
So. Aux. of Cal. S. V. M Ass'n.....			H. Preston Hoskins, Detroit
Southeastern Michigan V. M. Ass'n.....			G. A. Roberts, W. Raleigh, N. C'
Southeastern States Vet. Med. Ass'n.....	Feb. 20-22, '19.....	Birmingham, Ala.....	R. R. Birch, Ithaca, N. Y.
Southern Tier V. M. A.....	July 5.....	Binghamton.....	
Southwestern Mich. Vet. Med Ass'n.....			L. A. Winter, Eau Claire, Mich.

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

W. H. DALRYMPLE, Editor.

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FEBRUARY, 1919.

No. 6.

PUBLIC CONFIDENCE.

Occasionally one sees the statement that such and such a commercial enterprise has been "built by public confidence."

The confidence of the public is, obviously, one of the greatest and most valuable assets that any business organization could be possessed of, as without it, failure is almost inevitable.

To secure this confidence, however, the organization must be more or less perfect in each of its various departments and relations, not only as a whole, but all down the line to the individual unit—the subordinate employee.

To maintain this confidence, the concern must be known for the business acumen of its heads; for the strictly business methods employed; and for its absolute integrity in all its business relations.

If, therefore, the success of great commercial enterprises is dependent upon the confidence of the public, which it is, and which those who have succeeded in this way have a perfect right to boast of, there seems no reason why a profession like ours should not have a similar boast to make, or, at all events, keep constantly aiming in that direction; for if any body of men requires this confidence, and especially of the stock-owning pub-

lie, on which to build for the future, it is our own profession, collectively and as individuals.

The question arises, therefore, are we using our best efforts to secure this confidence; The times are changing fast—in fact, have already changed—and a new era is upon us; and reconstruction problems are due to be discussed and acted upon.

The results of the late war have set people thinking along more advanced lines in the production of animal life; how this may be accomplished through greater economy, not merely increased production numerically, but of superior quality, and through greater saving of animal life from disease, both of a non-contagious character and those plagues which periodically decimate their flocks and herds. Stockowners will require, and are already looking for, better professional service to aid them in the accomplishment of their purposes. Are we preparing ourselves to meet this greater and higher demand? Or, in other words, are we beginning to realize that more will be expected, and demanded, of us as a profession in the future than has been the case in the past; that our success depends upon the confidence of the public, and to secure which will mean, among other things, more thorough education in the various branches; closer fraternal relations; and unquestioned integrity in the case of each and every member? For, to quote the words of the "Immortal Bard":

"To thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man."

Let us hope the time may not be far distant when we can point with pride to the fact that the Veterinary Profession in America, whose aims are as lofty as those of any of the other so-called learned professions, has been built and maintained by public confidence, and that it stands like a rock on that splendid and lasting foundation.

PERMANENT ADDRESSES URGENT.

In order to save complications and a large amount of extra and unnecessary work in both the office of the Secretary, in Chicago, and that of the Editor of the Journal, in Baton Rouge, La., besides avoiding considerable disappointment on the part of members and subscribers through not receiving their Journals, it is extremely urgent that everyone who has been absent from home on military duty, or otherwise, should, at the very earliest

possible moment, now, send in his permanent address, so that the records and mailing lists may be made as nearly correct as possible.

It is important, also, that all members who have not paid their 1918 dues should do so at once to the Secretary in order to avoid missing their copies of the Journal. We realize that, to the member, such a small matter as sending in a postcard to have his address corrected, is very easily deferred to a "more convenient season," but to those of us who have to try to "keep the record straight," it often amounts to a tremendous amount of clerical work that might be avoided. Won't our members and subscribers please attend to these little matters at once, for their own sake, as well as ours? It will be much appreciated.

"DON'T THINK, BUT TRY; BE PATIENT AND ACCURATE."

One of the serious failures in accuracy of writing arises from the feeling that one will be heard for his much speaking. Many a writer has failed to make his points understood through the error of diffuseness. Many a physician has worked out a valuable point in research, in therapeutics, in technique or in clinical observation, but has utterly failed to impress it upon others. Instead of presenting his fact in definite and concrete form, he has smothered it in padding and buried it in a seven-column article. If a writer wishes to make a point he should present it definitely, without extraneous matter which will befog the mind of the reader and distract his thoughts from the central idea.

This is well illustrated by the course taken by Jenner upon the advice of John Hunter, referred to above as a quotation. After prolonged study and observation, he wrote a book upon his investigations of "Cow-pox As It Appears in the Western Counties of England." It was not a 1,200-page quarto volume, but a little book of 21 pages, of which one of the rare existing copies may be found in the library of the New York Academy of Medicine. He described distinctly and without camouflage one of the greatest discoveries in the history of medicine, and left a name equal in honor to that of Hippocrates and Galen. He did much; he wrote little. The value of medical writing is assayed not by how much but how good.—N. Y. State Journal of Medicine.

DISCUSSIONS ON PAPERS* AT PHILADELPHIA MEETING.

ARMY VETERINARY MATTERS.*

Major JNO. P. TURNER.

Major Turner prefaced his paper as follows:

Gentlemen: Any subject relating to army service at present cannot be made just as interesting as we would like, because there is a chap in Washington called the Censor, and that Censor puts a few tucks in your lips, and you may have a lot of thoughts coming to you, and interesting matter you would like to bring up, but you don't; you bring up what the Censor passes. I would state that this paper has been censored. That may account for its uninteresting qualities. At the camps where divisions are located each has its divisional meat inspector.

I can't pass over this section without making a few remarks about the Camp Training School. It is doing very, very good work; and if any veterinarians have the opportunity of going through that camp, and can stop off and see the instruction given by these camp instructors, and three veterinary officers, out in the field drilling 300 men, and drilling them as well as line officers—you would have heard some strong commendative statements. There is always a horse present. Every point is illustrated. It is a practical course. Men are taught there to be good veterinary soldiers; and I am glad to say there is a disciplined camp there. An officer said, "If you want to see a sanitary camp come over to the Veterinary School." (Applause.)

The Divisional Veterinary Department is at work from morning to night; there is horseshoeing morning, noon and night; and special attention is paid to the proper fitting of saddles and harness. Horseshoeing receives a great deal of attention in the army.

Regarding the success of the Veterinary Service Corps, of course, we judge any service by its success, I can say that the veterinary service is functioning well. I don't think we can take statistics entirely for the success or failure of any organization;

*See November Journal, page 126.

but statistics show that last December we had a death rate of 44/100, whereas in June we had a death rate of .071, or thereabout. The non-efficient animals last winter averaged about 20,000, while today they average about 12,000. We are not patting ourselves on the back with any great plaudits or credit. We have been doing some good work, but everybody has been helping. The Bureau has been helping us clean up corrals at points of shipping. But no experienced officer looks for this low rate to continue next year if we start buying. We ceased buying since last December—also, weather conditions have helped. So, we are not pluming ourselves on this very low death rate, because there has been practically no buying of animals, and the animals bought last winter have become acclimated. The diseases we had last winter were largely traumatic injuries which entered into the service, and the diseases were largely climatic. In the Eastern Zone we have had diseases mostly due to the invasion of the necrotic bacillus. With some recent training and recent experience the veterinary officers are getting I believe they will be able to handle this infection very much more systematically than they ever have been able to handle it before. (Applause.)

DISCUSSION.

DR. KINSLEY: I don't know that there is anything to discuss on Major Turner's paper; but I think the Association is deeply indebted to Major Turner for giving us such an able paper.

A MEMBER: We are very proud of the Veterinary School at Camp Meade. I have had the privilege of visiting the schools of the state for sixteen years, and I would say that we have never had the privilege of seeing such a training school in the State of Virginia. When we went there they gave us a real Wild West Show. It is only a few miles from Camp Lee. The Major has not done it justice. He tells you a few things about it, but you can't appreciate it until you visit it.

DR. BERNS: The detailed report we have received and had the privilege of listening to, by Major Turner, is extremely gratifying to men who have the interest of the veterinary profession at heart. To me it is most pleasant. Only a few years ago in the Army the Veterinary Corps amounted to nothing. Now we have a splendid veterinary establishment in the Army of the United States. To me it is most valuable.

DR. COOLEY: This valuable report by Major Turner has impressed me very greatly. It shows to me that the work these men

are doing has put the profession on the map as a one hundred per cent profession in trying to do work for our great country. (Applause.)

DR. PIERCE: I listened with considerable interest to Major Turner's address, and from what I have seen of the military camps in our district he has described them very well, and they are carrying out his instructions very well. He omitted one expression, one thing I consider fairly essential—he did not say a word about driving. At one camp, during the few hours I was there, every four-line team that passed me I looked over to see how the driver was holding his reins; and every man had the lines bunched up in his hands, and let the mules take the initiative. From what I saw they certainly had not the proper instruction in holding the reins. I did see one boy—I did not have the chance to ask where he was from—but he appeared to be a four-line teamster.

I was in the Army about the time Brother Berns referred to, about thirty-two years ago. I remember well that we had at that time some drivers. It is not common in this country any more to see four-line teams; and possibly my love of animals leads me to insist upon proper driving of them, and proper hitching them up; but no service team goes by me but what I look at it to see how the driver holds his reins. If he holds them properly he is a driver; if not, he is only good at drawing his salary.

THE B. A. I. AS A WAR AUXILIARY.*

JNO. R. MOHLER.

Dr. Mohler introduced his subject as follows:

Mr. President, Fellow Members and Friends: I fully appreciate the honor of being invited by Dr. Preston Hoskins, the Secretary of the Section on Sanitary Science, to speak to you a few moments this morning on the war activities of the Bureau. Particularly am I pleased to follow my military colleague, Major Turner, and to tell how the civil veterinary forces of the Government are attempting to supplement and assist military veterinary forces of the Government. (Vociferous applause.)

*See November Journal, page 96.

DISCUSSION.

MAJOR EDWARDS: It becomes my extreme pleasure as a representative of that which existed before the emergency to extend on behalf of the Army the appreciation that we feel for the Bureau of Animal Industry in the work it has done in helping out in war measures and stimulating the countrywide interest that is now being expressed in the veterinary profession, especially in the Army Veterinary Corps. I have been an employee of the Bureau in the past, and have had now eight years with the colors; and during that time the Bureau of Animal Industry has ever been before me as a guiding star—its professional viewpoints, its standard of service and the good it has been doing at all times. Looking backward, I believe that the spirit of the Bureau of Animal Industry has been as great a factor in the establishing of the present-day Army Veterinary Corps as any in the United States outside of the American Veterinary Medical Association.

It is to you young men—and not entirely all young men—representatives of the Army veterinary profession at this time that I want to urge coöperation. I want to predict for the future closer brotherhood; and a professional endeavor in reestablishing for the future military needs of the country a service with the Bureau of Animal Industry that will absolutely coördinate; so that we will never again be caught without an adequate supply of remounts and a meat supply that will show symptoms of being disturbed at almost the first flash of engagement.

It is with great pleasure that I thank Dr. Mohler for the paper that he has read to us, showing the wonderful work being accomplished by the Bureau of Animal Industry in assisting us, the military men, in accomplishing what lies before us; and with him I say, "God speed the day when all of the members of the Bureau of Animal Industry that have been sacrificed to military service will come back noble heroes." (Applause.)

A MEMBER: It seems to me that not many of us realize what the Bureau of Animal Industry really does. I have been able to get very close to them because of the geographical situation, you may say, in Virginia. I don't know what the people would have done without their assistance. I know it has not been very long since some one spoke of the debt they are owing. Many of you are much older than I in experience, but we have got to get together and take care of the Bureau of Animal Industry.

We have got to take care of the members of the profession. So far as Virginia is concerned, we are willing to do our share toward it, but there must be some effort made in Washington to take care of these men. You know what Dr. Hoskins and some others have done from an army standpoint, but we have not all done our duty in this respect. And if Secretary Houston ever did anything of value to the Bureau, he did it when he appointed Dr. Mohler as Chief. I pledge Virginia to do everything we can to help to get some increase in salary for the Bureau men. They are not paid what they should get. We have a number of them working in Virginia on hog cholera and some working for the eradication of tuberculosis; and I don't know what we would have done if it had not been for the men working on glanders. You know we have remount stations down there, and we could not have handled the situation without the Bureau of Animal Industry.

Every one is working, but nobody has gotten busy yet to help and see that the men working in the Bureau get the proper compensation. I pledge you the help of Virginia. (Applause.)

DR. LOWE: Mr. President and Fellow Colleagues: After listening to Dr. Mohler's able address covering the various branches and the activities of the great Bureau of which he is the executive head, it occurs to me that we should not lose sight of another branch, another feature of his work. I feel that we are greatly indebted to Dr. Mohler for the great increase in membership in this Association at this meeting. If I am not mistaken, he is largely responsible for the lineup of veterinarians in the Bureau, that are knocking at the door of the American Veterinary Medical Association. And the man who has done this certainly must have vision. I think I can say that we feel that every veterinarian who is active in the Bureau of Animal Industry should be a member of this great organization, and it is certainly very gratifying, Mr. President, to us all to receive and to welcome so many Bureau men as members of the American Veterinary Medical Association. (Applause.)

PRESIDENT TORRANCE: Before passing on to the next item on the program I would like to say that we have with us today a British officer who has had great experience in dealing with some of the problems occupying the minds of the Chief of the Bureau, and some of his officials, especially as to influenza or shipping fever in horses. Col. Oliver in conversation with me last night gave me some particulars as to their present method

of combatting this trouble, and if he will oblige us at this time I am sure it would be of great interest to the members present. (Applause.)

LIEUT. COL. A. OLVER, of the British Army: Mr. President and Gentlemen: This is quite unexpected, and I am afraid I am not ready; but at the same time I am very glad to add my small word to what has already been said as to the valuable work being done by the Bureau of Animal Industry, which has been of great assistance to us in handling the considerable number of animals we have to handle. When I first came to this country a year ago the proportion of disease in the mounts we purchased was appalling. I made a few remarks in Kansas City in which I said we hoped, in the course of time, to do something with the serum work, but at the same time I expressed the opinion that what we had to allow for at that time, at that state of our knowledge, was sanitation; and I don't wish anything I might say today to interfere in the least with the appreciation of the value of sanitation. I feel that the results we are getting now are undoubtedly to a large extent due to the work which has been done by the Bureau and by the United States Army inspectors in connection with the control of infections from this so-called influenza. Personally, my own view is that the term "influenza" applied to this disease is not the one I should use. From the observations which we have carried out during the last year and from observations which we carried out in England before I came out here from the large mass of material in England and France, the whole of that work points, I think, to there being two distinct conditions, one being what I should call "influenza," due to a virus, which experiments give evidence that it can be spread very rapidly, for instance, by infected stalls and so on; and the condition with which we deal here in this country, wherein we have no evidence whatever of any direct conveyance in that way.

From the condition under which one has to work in organizing a thing of this kind without previous notice we have had to associate our pneumonia condition with other cases, which has been unavoidable; but the evidence of direct infection running through animals suffering, for instance, from wounds—we never have very much of that, and careful statistics bear out that there has not been much of this condition. Shipping fever, I should say, is the best term; and shipping fever, I should say, is the result of not only shipping but of any other condition which reduces the vitality of the animal, and to certain organisms. We

never had any evidence of it running through stages in the way that this infectious influenza runs through stages. Every few years we get an outbreak of so-called influenza, which runs through a district like fire, and nothing can stop it. We have had nothing like that.

By taking temperatures of every animal for the first, four, five or six days after they arrive we find we still get 60, 70 or 80 per cent of those animals with a high temperature, and they go through some form of sickness; what sickness it is depends to some extent on the kind of organism and the condition under which the animals have been brought here. If the vitality of the animals is great enough, they do not resist the fever, but do resist it progressing on to something worse.

Last year I said we had met with considerable success with defibrinated blood. Captain Gregg's system you have heard a great deal about; and, of course, it has done a great deal of good. We have records of many thousands of animals, and the result is that the mortality amongst those animals is considerably less than one-third of what it is in the other types where serum work is not done. Those figures are so accurate that you can't get away from them. They show that what is classified as serum work has done an immense amount of good.

Captain Gregg tried to immunize the blood of the animals by injecting blood from animals which had suffered from the specific disease with which these animals were threatened. Defibrinated blood was used with the most satisfactory results. As Captain Gregg himself described it, it was an experimental form of treatment—that is, he had no knowledge of the definite organisms he was dealing with. Our opinion, however, is that the main organism from which he got his result is what we call "bacillus X." That was the organism which Captain Gregory of England recovered from this form of fever.

To extend such a system as that all over the country and place it where you have not the care necessary in carrying out the technic, would prove liable to cause certain difficulties. Shortly after I arrived in this country, a year ago, working with the special medium that Lieut. Col. Watkins Pitchford had used in England, I was sent with Dr. Gregory to Newport News, to recover what we could from the blood of infected horses. We recovered various streptococci, and among them the same organism, or similar, to what Captain Gregg had called "Bacillus X." It undoubtedly has very close association with the shipping fever

and pneumonia. In a series of observations we have been able to recover this organism from the blood stream either in a pure culture or associated with cocci of different kinds in sixty per cent of the cases. And another fact—so far it is the only organism we have been able to obtain which reacts to the agglutination test.

Then, having recovered the organism, we proceeded to make pure cultures of it, and then endeavored to hyper-immunize with pure cultures of this organism associated with streptococci and staphylococci, on which a certain amount of work had been done previously by Captain Gregory at Newport News. These streptococci and staphylococci known to be associated with organisms of this kind. We found that the ordinary recovered animal from an attack of pneumonia or shipping fever would agglutinate at a dilution of something like 1 in 80; it varied from 1 in 80 (in horses it was frequently nil), in mules it varied from 1 in 80 or 1 in 60 up to 1 in 300. We have been able to get it up to 1 in 5,000.

It is used in two ways: as a preventive and as a curative. The result of the test as a preventive was, and that was shown clearly, that for a short time there was strong protective power. At first the reduction both in mortality and sickness in inoculated as against the uninoculated was about one-third. Later it became evident that the immunity conferred, as was expected from a protective measure alone, lasted about three weeks; then it began to wear out and the animals began to grow sick, and the immunity conferred was not as great as it would have been.

We then made an attempt to extend that immunity by giving a second dose at a later period; but then we came up against certain difficulties which would require a great deal of explanation; and doubt was thrown on the sterility of the serum. As a matter of fact, however, the whole of the serum previously used had been most carefully tested by standard government test and also by inoculation in guinea pigs and rabbits, and nothing had been found. It was re-tested after the doubt had arisen, and still nothing was found. But, as it was, the protection afforded was of such a short duration it was decided not to continue with that work. What we did was this: Having given an initiative dose, and then another dose three, four or five weeks later, we got a reaction which I have little doubt was absolutely normal—it has nothing to do with the sterility

of the serum. We were able to produce this reaction with great certainty by allowing a time between the doses.

Up to the present the results have been very, very encouraging. Our system is this: A trainload comes in of freshly purchased animals, which our experience shows will develop sickness of anywhere from forty to fifty or more per cent. We take the temperatures of all those animals the day after they arrive, and any with a high temperature—102 or over, or even less—is given a dose of this serum, one dose subcutaneously, then on the second or third or fourth day—as a rule, not more than one dose is required, the temperature goes down, the animal feeds, and goes along very nicely—on the second, third or fourth day, or even the fifth or sixth day, if they do not appear to be doing nicely, a second dose is given. A third dose is seldom required, but during the last three months that we have been purchasing we have, in addition to the same serum used before, been treating a number of cases, three or four trainloads a day. The first trainload came into the depot June 13. Those animals came in, consisting of 530 animals—I think 534, to be exact. Of those one had to be destroyed. He had an open joint. And one died three weeks and three days later from pneumonia. It is now ten weeks from the time they came in.

In the second trainload two animals arrived in such condition they died within twenty-four hours, before they could be treated with the serum at all. All of the remainder are alive.

The same applies to another trainload which came to Montreal on the 5th of this month. Those animals came in in extremely bad condition, during the very hot weather, and we expected bad results. The first day 160 were picked out with high temperature, and in the first two days 260 had been picked out with high temperatures and given the serum treatment. At the last report all were still alive.

Another trainload came in on the 8th, and one of the animals was moribund with pneumonia and died an hour or two later, before the serum could be used. All the rest are alive.

Out of these fourteen loads, comprising 4,310 animals, the mortality, from the last reports we have, has been: one from an open joint, one from pneumonia (which was treated with serum); and three from pneumonia which were never treated with serum, and which died within twenty-four hours after arrival.

With those results I should say we are working along better than ever before. I am sure that with those trainloads under

any previous system, you might have expected a loss of two, three or four per cent. I don't say we are going to maintain that standard for any length of time, but I have no doubt the serum has acted very, very well. We have had some difficulties in connection with it, and there are considerable difficulties in connection with the hyper-immunizing that will have to be overcome. There are certain losses that will have to be taken in connection with that; but the results up to date have been most encouraging, and I think it will have a big effect in the future in keeping down the death rate from this condition.

Where the organism comes from is a problem I have been trying to solve, but up to the present I have not succeeded in doing it. Biologically, it is very similar to the Hay Bacillus, but its toxins are very powerful, and we have not yet been able to recover it definitely from any outside source, outside of the blood stream or the glands, et cetera, of infected animals. But, as I say, we have no evidence of it running through a trainload. It holds its power as a result of debilitating circumstances. You can keep your animals as long as you like under healthful conditions. In some of the camps the animals remain for weeks and weeks. The conditions in those camps I don't think are particularly sanitary, not as sanitary as in some of the others; but you take those animals and move them on a long train journey and you still get some traces of the fever, but they are not so bad if the conditions under which the animals were held have been sanitary. Why that should be it is hard to say. It may be a question of the virulence of the organism being raised, and also the fact that animals held under unsanitary conditions have reduced vitality. That we know is correct, because we have had an experience of that in an experiment which was carried out last year, in regard to using the Continental system of bedding; under that system the manure was allowed to build up under the animals, and the sickness was increased enormously—and I think the cause of the sickness was probably reduced vitality. Whatever you may expect from serum or any other form of treatment, don't let anything that I have got to say interfere with the basic importance of sanitation. We have concentrated on it, and the results bear us out. You can see it in the results from the different depots. The sickness and mortality vary according to the state of sanitation in which the depots are maintained, every time. Sanitation is the sheet anchor, after all, in dealing with this situation. Prevention is much better than cure. If

you have some means of cure that will help us out, that is good; but sanitation is the sheet anchor after all. One of the difficulties we have had to experience in dealing with this condition is the fact of animals being held in long open paddocks which it is impossible to inspect.

I don't care what you do, or how you try, where you have hundreds of animals running in a long, open paddock, it is impossible to inspect. It is only a question of time, a few days, more or less, when that paddock will become infected, and grossly unsanitary; and no system of sanitation can get over that difficulty.

On the other hand, if you have got an establishment of moderate surface which you can constantly disinfect, and maintain in sanitary condition, there is no reason why it should not be in as good condition after a year's working as at the beginning. That is one of the difficulties we have had to contend with.

I am very glad to have had the opportunity to make a few remarks on the subject, because I know it is one of the greatest importance, and I am sure that the work the Bureau has done in cleaning up stock yards and tracing the causes of disease, et cetera, in connection with the military authorities, is of the utmost importance with regard to remount work in this country, and I am glad to add my little word of thanks to the Bureau of Animal Industry for the work it has done, for it has been of great assistance to us. (Applause.)

PRESIDENT TORRANCE: Gentlemen, I am sure we are all grateful to Col. Olver for the address he has made, and the information he has given us with regard to the work at the remount station. It is of vast importance to the Army, and every bit of information we can get on it is of the greatest value.

THE VETERINARY PRACTITIONER AND THE CONTROL OF INFECTIOUS DISEASES.*

V. A. MOORE.

DISCUSSION.

MAJOR COTTON: It seems to me that this paper opens up a question on which there is a great deal of discussion from the standpoint of State control. We have numerous State organizations which depend upon local practitioners, deputies and State

*See December Journal, page 211.

veterinarians for control work in neighborhoods. This paper is an innovation. We have other States, and believe that in order to get the proper State control it is necessary to have deputized State veterinarians under full-time pay and under the control of a central State organization; and I think this paper should be thoroughly discussed. This is a question on which various States differ on this proposition. I should like it to have a free discussion.

DR. WILLIAMS: As I understood Dr. Moore, there is no conflict between the views just discussed and on the other varying views held by veterinarians. As I understand, a communicable disease comes to the knowledge of the State Veterinarian through the practitioner, and through no other means. Outbreaks among animals are first seen by the private practitioner, and the function of a State or Federal Veterinarian is to organize the forces to combat the disease once it has been reported; but there is another very prominent and very important phase which Dr. Moore has brought out, and which should be emphasized. That is, that many of the contagious diseases, which incur great losses amongst live stock, are not handled by central veterinary authorities; for instance, I am giving most of my time to a great infectious disease regarding which no central authority takes any cognizance beyond investigation. The central authorities, the bureaus in the various States, attempt to investigate, and lay the facts before the leaders of health, and before veterinarians, to show how this group of losses may be prevented; but it has not yet, and I sincerely believe it will be a long time before any such central authority shall attempt any central restriction to prevent those diseases.

We will find that only a very small percentage of diseases are handled by central authorities at all. One State, for instance, has a law requiring us to promptly report any contagious diseases which we see, which includes everything from the mange in cats to glanders in horses; but I don't think that a case of mange in cats has ever been reported to the State Veterinarians, nor do the veterinarians of other States report any very large number of diseases.

The second practitioners' course at the New York State Veterinary College, New York City, which occupied the three latter days of January, was, judging from the program, replete with good things, both as to topic material, and the personnel of the lecturers and instructors.

PRESENTATION OF PORTRAITS.*

R. F. EAGLE.

Prefatory by Dr. Eagle:

Mr. President and Gentlemen: Since this convention has been here assembled you have had the opportunity of listening to many addresses, classic in some respects, and I don't feel competent to review the progress of veterinary science. I am here for another purpose. But, in order not to encroach upon an already crowded program, I am going to get to the little statement I am going to make immediately.

Just before leaving Chicago, Mr. Ogilvie informed me that Canada is contributing an oil painting to Dr. J. G. Rutherford. (Applause.)

REMARKS.

DR. W. H. HOSKINS: The presentation of these three portraits of honored members of our profession (Drs. Salmon, Melvin and Mohler) is of particular interest to the practitioners of America; and in order to carry out the intention of the committee I move that these pictures be turned over to the Executive Board with the view of seeing that they are placed in the Saddle and Sirloin Club of Chicago, with an expression of our appreciation for this recognition they have given these distinguished members that we have mingled with so many years.

DR. MAYO: In seconding that motion I would also like to include that we extend to Mr. Thomas E. Wilson our sincere thanks for his generous contribution to this valuable object, and also to the Saddle and Sirloin Club for the opportunity not only to establish this gallery, but for the opportunity they have extended to us to place these distinguished faces of our veterinarians there.

DR. BENNETT: I would like to suggest that the portraits be presented to the Saddle and Sirloin Club of Chicago during the Stock Show around the first of December. Many of the veterinarians here will be there. A great many of the prominent leaders in veterinary medicine of this country will be there, and also of Canada; and I would suggest that the presentation be made to the Saddle and Sirloin Club at that time.

PRESIDENT TORRANCE: Would Dr. Hoskins be willing to have that included in the original motion?

*See January Journal, page 362, for full statement

(Dr. Hoskins accepts the amendment.)

PRESIDENT TORRANCE: It has been moved and seconded that these pictures be turned over to the Executive Board with the view of seeing that they are placed in the Saddle and Sirloin Club of Chicago, with an expression of our appreciation of this recognition they have given these distinguished members we have mingled with so many years, and that we extend to Mr. Thomas E. Wilson our sincere thanks for his generous contribution to this valuable object, and that our thanks also be extended to those other gentlemen who have contributed in no small measure to the carrying out of this estimable project.

(On vote the motion was passed unanimously.)

THE LIVE STOCK INDUSTRY, PRESENT AND PROSPECTIVE.*

J. J. FERGUSON.

In introducing his subject, Mr. Ferguson spoke as follows:

This is not a very good time to talk. A man said to me this morning: "Why aren't you fighting? Every man who looks as able-bodied as you should be over there giving the Huns hell." So I don't think it a good time to inflict much of a talk on you.

In order to save valuable time I thought it well to put in the form of a small folder the information and data which I thought it might be well to be put before you.

Gentlemen of this Association, your work is so vitally connected with the success in every way of the live stock industry that we regard you as fundamental, and it was with great pleasure indeed that our people were advised that I was invited to come here and appear before you. I will just run over a few of the facts I have jotted down, and which I have had printed here so you may have them before you and may read them at your leisure.

With reference to the section of Mr. Ferguson's paper entitled "Prospects for Live Stock Industry," Mr. Ferguson interpolated as follows:

Now we come to the crux of the situation. What does the future hold for live stock men and veterinarians? On this mat-

*See October Journal, page 8, for complete paper.

ter no man has any definite knowledge. I might say that even the United States Federal Trade Commission, which has more resources at its command than any other organization, has no definite information on that point. In spite of the submarine menace there was never a time in the history of the country when there was such an opportunity in live stock production as there is today. The story that we are short on our visible supply and actual supply, not only at docks, but here at receiving points and terminals on the other side, is so far from the truth that, on the contrary, the supply is away ahead of schedule all along the line. Don't forget that point. (Applause.)

Under the subject "New conditions offer greater opportunity for constructive service in the veterinary profession," Mr. Ferguson spoke as follows:

So much for the situation. What interest has this to you as members of the American Veterinary Medical Association? And I want to read a mild indictment to you men, with many of whom I have been associated for a great many years. Many of you have done good work, and you get together and say, "We are the salt of the earth, and do great things for the country," but old things have passed away. What applied five years ago does not apply today; and when the war is over, as one of the preachers of Chicago said the other day, "We are going to have a new Heaven and a new earth," and you can look forward and see whether you members of the veterinary profession are doing your part. Anything and everything is within the individual activity of every one of us. You and I are doing things today to help that we never thought we would be called upon two years ago to do; and so it is to be two years from now. So, here are a few points in this mild indictment I am going to read to you. There never was a time in the history of the country when wool was so needed and essential for the conduct of a war. Although Mr. McAdoo is Director General of the railroads, many of the old officials are still left, and they have coöperated with live stock dealers, in years past, in the disinfection of primary stock yards, terminal stock yards and rolling stock of transportation companies, and all that the transportation companies use to help in moving stock from one to another part of the country.

The thought I have behind this suggestion is not a hit-and-run thought, not a sporadic institution, but that the American Veterinary Medical Association in general should have a sort of publicity bureau contributed to by the minds of the best men in

the profession, who will prepare press letters and bulletins which could be syndicated, and which could be sent to the man on the land, who can not be reached by a journal of this kind. Don't you think the Live Stock Association of America would be glad to have a man like John R. Mohler present an address on the work of the Bureau such as he presented here a few hours ago?

The only trouble with all our organizations is that they concentrate, they do not get out and reach the men whose work is basic, farmers, breeders and shippers.

If you knew as I know—I happen to be a breeder of pure-bred stock myself—what thousands and thousands of dollars' worth of pure-bred stock is lost every year by reason of having them go the circuit of state fairs, you would know the value of this little point right here. See that your state fair associations have their places cleaned up. (Applause.)

DISCUSSION.

DR. LOWE: I feel that this Association is very greatly indebted to Mr. Ferguson for his paper, and for the broad and competent presentation of the subject discussed. It must be apparent to all that the interests of the live stock dealers and the practicing veterinarians are inseparable, and the more we become imbued with that thought the better it will be for all interests concerned in this country and throughout the world. I have, Mr. President, for many long years thought deeply upon the preëminent importance of the veterinarian being in closer touch with agricultural and live stock interests of the state and the nation; and I think we must all feel very much pleased that Mr. Ferguson has presented the matter in such an admirable and interesting way to us. I feel that we should not let this matter drop here, but that we should take steps as individual veterinarians, as members of our respective state organizations, as members of this great international veterinary association, to carry into effect the very things that Mr. Ferguson has suggested to us. They would be helpful to the live stock interests and they would be helpful to the veterinary profession. I trust this subject will be fully discussed.

DR. MURPHEY: One thing brought out in this discussion I think we should take home with us and keep in mind, and that is the fact that permanent agriculture must be based on successful live stock industry.

HOG CHOLERA CONTROL IN THE EAST.*

E. A. CAHILL.

DISCUSSION.

DR. BIRCH: This is a subject, I think, in which we are all interested. I know I am especially interested in it, and I could not let the opportunity go by to compliment Dr. Cahill on his paper, and on his manner of approach to the subject. All of us know that it is the young pigs that are giving us the trouble. We can give simultaneous treatment to the old animals and be certain of lasting immunity, or reasonably certain, at least.

There are one or two points in regard to Dr. Cahill's paper, and especially the point in regard to the differences observed at different places, which I would like to comment on. Like him, I am at a loss to explain those differences, but I do know that in many of the herds in which I have worked the immunity conferred by immune mothers will not last more than a couple of weeks. In several of these herds we have had to give serum treatment to save their lives. So, they will stand up under serum treatment alone and virus treatment alone six weeks, but here again we get fooled sometimes, and we are really, in this one respect, treating from clinical experience, and not from experimental work. We don't know as yet the relation between the immunity conferred—that is, the passive immunity conferred by serum alone, and the active immunity conferred later on. At present I have experiments going on on that particular point; and that is why I am so interested in Dr. Cahill's paper, and he has certainly given us a paper which it is well to take home with us. (Applause.)

A MEMBER: Dr. Cahill has mentioned the fact that he waits until the young pigs are six weeks old before he gives them serum. We have in California a number of cases such as were mentioned by the last speaker, in which our young pigs become affected with cholera before they are six weeks old. In that case if we give them serum alone we save their lives, I would like to know how long after you would give the simultaneous treatment.

DR. CAHILL: Speaking for the East, I can tell you that the passive immunity conferred by serum alone treatment will invariably last six weeks. There are exceptions, but I saw only

*See January Journal, page 314.

two exceptions to that rule in the east. The passive immunity conferred on the young pigs, or any pigs, in those exceptions, lasted three weeks; but in all other cases it lasted six weeks.

There must be some problem in immunity that is not clear, and I am not attempting to explain it, but simply trying to present it so clearly that it may be done.

In the middle western states they told me the pigs would not remain immune only a few weeks, and it did not seem possible—only after seeing it for myself did I believe it.

DR. JOHN REICHEL: Dr. Cahill's experiences with the baby pigs is very interesting and I think very valuable. To me it seems something very definite is at work. When we study these figures of Dr. Cahill's about the number of susceptible animals after a certain period there does not seem to be much difference between the number after eight weeks and the hogs weighing two hundred pounds. Of the total number, as I take it from Dr. Cahill's report, something like eight hundred pigs were included in these experiments, weighing from fifteen to thirty pounds each, with very little differences in the ages of those pigs. Just the factors that caused failure or success are the things we are interested in, and I wondered if Dr. Cahill gave any thought as to the fundamental reasons for the differences. I have in my experience noted that pigs born from immune stock, or non-susceptible stock, do possess some "mother's immunity" for some time—how long it lasts I don't know, but it does last for some time and it does not matter so much whether you give the pigs serum or virus; it does not seem to do much for the pig.

It seems, however, in the application of the simultaneous treatment through the baby pig, it won't do much unless the pig happens to be susceptible at the time you administer the simultaneous treatment. We don't know when the pig is susceptible, or whether it may transfer this passive immunity or mother immunity; and I would ask whether we administer virus to pigs of a known age—not fifteen to thirty pounds—but of a known age? It seems to me we get this breaking down where the mother immunity ceases and the pig becomes susceptible. It seems to me the pig must be susceptible to act in order for the treatment to get anywhere. I should like to know if Dr. Cahill has had any experience in treating with virus alone when in that susceptible period.

DR. H. P. HOSKINS: In asking Dr. Cahill to go on the program for this meeting I knew he had a wonderful amount of

cases in his experience in Massachusetts in the control of cholera in these down-east garbage-fed herds. It is extremely interesting to me, for while I was in Colorado I had experience in a similar matter; but when we got together in Chicago we could not agree, and as others have done we came to the conclusion that there are at least two different kinds of cholera in the United States. And we have been in the habit of speaking of them as "eastern cholera" and "western cholera." That is why I wished Dr. Cahill to go on the program at this time and present hog cholera under eastern conditions; because, as he brought out, the cholera you have in the eastern states is absolutely different from cholera in the corn belt.

The question I wish to put to Dr. Cahill can be answered at the same time he answers Dr. Reichel, and that question is this: Whether these pigs were still nursing or not—because I am firmly of the opinion that these pigs while they are still suckling undoubtedly get considerable protection through the milk from the mother, and that is a factor which should be taken into consideration.

In discussing these remarkable results—I say they are remarkable for this reason: I believe it would be absolutely impossible to duplicate them or come anywhere near duplicating them in a herd of hogs in Minnesota.

DR. KINSLEY: I would also like to ask Dr. Cahill a question concerning the immunization of the pigs. As I understood, he said that now the method resorted to consisted of giving serum only to pigs at about weaning time, and about thirty days later following with the simultaneous treatment. Is that correct?

DR. CAHILL: Six weeks later.

DR. KINSLEY: I would like to know if those six weeks later pigs, which have been given the simultaneous treatment, have really been exposed to cholera, and, if so, why they did not succumb in the same ratio as we see on the chart. That method as I have seen it applied certainly has not protected pigs in the middle west.

DR. PIERCE: When Dr. Cahill is answering these questions there is one other he should answer at the same time. He mentioned that he gives the pigs the single treatment at six weeks of age, and six weeks later the double treatment. Are there any pigs at the second treatment that do not receive the double treatment? If so, in what condition were the pigs?

DR. REICHEL: May we ask Dr. Cahill to answer these questions before so many pile up?

DR. CAHILL: Thank you, Dr. Reichel. I am going to start at the rear end and go forward. The first question is that of Dr. Pierce. I rather thought he was a little more familiar with our work than to ask that question. It was covered in the report of the Commissioner pretty thoroughly last year. In these cases, almost invariably—I am speaking now of garbage-fed herds only—almost invariably if the simultaneous treatment is not given six weeks after the serum-only treatment, almost without exception we have an outbreak of hog cholera in those pigs. The owners of the garbage-fed herds, in the New England states at least, are so aware of that fact that after the five weeks' period they start calling the Commissioner's office, and make engagements to have his men, if possible, at their places on certain days, which will be six weeks from the time the serum-only treatment was given. Of course, if they were able to follow that closely they followed it six weeks to the day; but I don't mean to say that if that were not done the outbreak would occur on the day after the six weeks were up. I do mean, however, that almost invariably if the six weeks or seven weeks were allowed to elapse between the serum-only and the simultaneous treatments the outbreak was pretty sure to occur. That we found repeatedly from experimental work. I could have put it in the paper, but I thought it was too lengthy and too statistical. We did find the length of time that the passive immunity from serum-only treatment lasted. I am not attempting to speak of conditions in Dr. Kinsley's section, but only in the New England states. In New England, where a large percentage of the animals are garbage-fed, it will invariably be found that the period of immunity, passive and active, conferred by serum-only treatment averages six weeks. Occasionally it does happen—and I suppose this must apply to all forms of passive immunity—that certain animals contract the disease; and it is only to be expected that out of one hundred animals you will not get one hundred per cent that do lose their passive immunity in six weeks. I have always found some animals who will retain their immunity for six and a half or seven weeks.

Dr. Reichel's question regarding virus given at a definite age—in order to answer that I will have to draw a line of demarcation between the two kinds of feeding. You know garbage feeding is new in many sections of the country. In New Eng-

land, and in Massachusetts, it is about as old as the live stock industry. There are many herds they have been feeding garbage for thirty years—never saw anything but garbage from the time they are weaned from their mother to the time they go to market. Many never leave the pen until they go to market. These garbage-fed herds I speak of as having been in existence so many years have gone through a peculiar experience. I don't believe it can be paralleled in any other section of the country. Before Massachusetts began its campaign against hog cholera the statement was often made that in order to raise five hundred hogs twelve hundred would have to be farrowed. The owner would be satisfied with that proportion. As time progressed the history of the work showed that invariably these pigs in garbage-fed herds were practically safe while nursing and up to forty pounds, but in approximately twelve weeks there was an outbreak of hog cholera in those herds. There are many in the room who have had experience with garbage-fed herds, and I believe they will tell you that is their experience—that where garbage has been fed for many years they can allow the serum-only treatment to go and let the herds go, even though they had no trouble with them as a growing herd until they reached forty pounds, and then have to do something. In other words, that does not apply.

Although I spoke in my paper of animals taken from herds where the immunization treatment was being commenced—and the immunization had not been carried out among many registered herds—the majority of them, however, were conducted with small corn-fed herds—and the amount of immunity conferred by the mother, passive immunity, was a negligible quantity. We do not figure it was necessary to carry that into effect. At the same time, it was noted that when virus was given as a control we invariably had hog cholera in from seven to fourteen days.

I did not get the note on Dr. Hoskins' question.

DR. H. P. HOSKINS: The question was whether you took into consideration—whether all these pigs were in the same class, whether suckling or not. That is, were they still nursing?

DR. CAHILL: I might say that the variation there appears worse than it is. It is pretty hard to go into certain herds and take eight hundred animals and find them all to weigh from fifteen pounds to twenty-five pounds—we have certain animals in there that would weigh fifteen pounds, although five weeks old.

They should weigh twenty-two or twenty-three pounds in that section. So that, all those animals were in the neighborhood of five to six weeks old; although their actual weight did vary, their weight was practically the same, not ten pounds' difference in the weight.

DR. HART: We have been feeding corn in California, and the statement that Dr. Cahill makes with regard to the loss in these hogs raised for generations on garbage feeding will hold. When the simultaneous treatment will hold they live. With the opening of the war many hogs were brought in on garbage feeding that had never had garbage before. Now the first litters will not hold until forty pounds in weight, but will easily break—and many cases at three weeks of age, too young to give the serum-only treatment—and we had to do something with those pigs to save their lives. We don't know exactly what to do with those pigs, whether to wait to give them serum-only treatment or give them serum and virus, with the idea that the permanent virus infection they get in the garbage will prevent them from breaking. We have tried both schemes and have not had success with either of them. Those hogs that have not had garbage for several generations, and on which they do break, have animals die at one hundred and fifty to two hundred pounds, and yet there will be no other losses in that herd. It looks serious for the time being, but if no treatment is given a very small percentage die; but that percentage is too much loss at the present time.

DR. CAHILL: That coincides exactly with the east. These owners who have been feeding garbage would not sell a pig, or it would take a great deal of persuasion to buy pigs, from garbage-fed herds; they keep all the pigs, especially those the least bit applicable for the foundation of herds.

Every dealer from the east who went west and bought a good sow or boar told about the break fourteen or fifteen days after they got there.

As the swine owners commenced to see that hog cholera really could be controlled they naturally went out and bought more animals, because the garbage was available, and if they could only prevent cholera their troubles were over.

Now, the animals that had been there generation after generation practically never break inside of forty pounds; but as soon as you bring in a new sow or boar and put it into that herd the pigs from that herd will be sure to give you trouble. They would

break, as Dr. Hart says, from three to four weeks, and sometimes less. The only way to govern that was to insist on State control. It is easier to do that under State control than under private authorization.

We were able to formulate certain principles from our experience. They are as follows: First, pigs must never receive a simultaneous treatment under forty pounds—and we try to get a combination of forty pounds and twelve weeks of age. Second, simultaneous treatment must never be administered within six weeks of serum-only treatment.

Those two facts were only arrived at after considerable field observation and experimental work. Sows which had been brought into the herds were given serum-only treatment within three or four weeks of farrowing, and the young pigs would sometimes carry immunity until one or two weeks of age. If a break occurred the sows would be given serum-only treatment within twelve weeks of farrowing; but never simultaneous treatment given six weeks after serum-only treatment without expecting a break.

DR. McLEAN: This is an interesting subject to me because I am engaged in the hog-raising business, and I feed garbage. I think the difference in practice of protecting against hog cholera as between the garbage-fed hogs and the corn-fed hogs is due to the power of resistance in the corn-fed hog. A corn-fed pig at the age of one hundred days should weigh one hundred pounds, some of them one hundred and twenty-five. It is very rarely that you can get a garbage-fed hog to weigh one hundred pounds in one hundred days. The difference in the quality of the food makes a great difference in the growth of the pig; consequently, it makes a great difference in the natural power of resistance in the hog. This is well demonstrated in the appearance of the carcass of the corn-fed and the garbage-fed hog. The fat of the corn-fed hog is solid, more firm, and less friable. In the garbage-fed hog the fat is flabby and soft. It is hard to get the lard from a garbage-fed hog hard.

All garbage-fed hogs are exposed to cholera from the time they are fed garbage. Some years ago, when the lamented Dr. Melvin was in charge at Washington, I asked him, at Chicago, if it were not possible that the wide spreading of hog cholera was due to the trimmings of pork that were shipped from the packing houses in the west. He said: "It is impossible." I said: "Doctor, I believe that the scattering of hog cholera is

due to the feeding of pork from the western packing houses which escaped the inspectors—and we admit it is an utter impossibility for the inspector to detect early infection.” Some years later Dr. Melvin said: “I owe you an apology. We are satisfied that hog cholera is scattered from the trimmings of packing house pork.” That was visibly shown me in my treatment of hog cholera some years ago where it broke out in the herd of a man who fed his hogs with hotel garbage, and he was using western pork. I could not trace the outbreak to any other cause.

I have found that the continued method of garbage feeding makes the hogs naturally immune, on account of his becoming accustomed to eating this more or less infected food. There was a time, you remember, when we used to vaccinate the hogs and then turned him right in among infected hogs. At that time it was advised to feed him on the flesh of hogs which had died of hog cholera—before the simultaneous method was used.

DR. H. S. MURPHEY: In our experience last year we found there were two kinds of cholera. I think the men who have a large amount of experience in dealing with hog cholera in Iowa found there were about fifty-seven. We found there were certain factors which had to be taken into consideration in the handling of the animals. Last year there were a good many animals shipped into the state, and they had to be given the serum-only treatment, and six weeks after arrival they were given the simultaneous treatment, and the losses were very heavy. It just raises the problem that there is no solution to it yet. I think there are good suggestions, especially Dr. Cahill's, that it must be six weeks between the two treatments. But the secondary infection must play some part as yet unknown in the duration of immunity by the serum-only or the simultaneous method.

DR. BIRCH: I would like to ask Mr. Murphey, in those cases where the animals were lost—that is, with the serum treatment given at the time of shipping and the simultaneous treatment given, I think you said, four weeks after shipping—did those animals die as the result of the simultaneous treatment then or did they fail to stand up later?

DR. MURPHEY: Some of them died at that time, but usually they contracted the disease in about four weeks, usually broke in about four weeks after this treatment was given. There were all kinds of theories. One was that the immunity, passive immunity, destroyed the virus, the second infection, and that when

the immunity then passed from the second infection, they were again susceptible, in four weeks. But in some cases the serum and virus proved to be potent by test, and it was proven that the pig died of cholera by invaders of secondary infection.

DR. BIRCH: I do not just get Dr. Murphey's point. I don't see how, if the virus were destroyed, it would kill the pig on the second injection; and I understood him to say that if the serum-only were given first and the simultaneous later, it died following the simultaneous.

DR. MURPHEY: Some died that way, but most as the result of the break—but after four weeks.

DR. FITCH: Dr. Murphey in his remarks mentioned the point which is of great importance. Throughout the state from which I come, the State of Minnesota, there is more or less cholera. However, it seems to be more or less localized in certain counties. We have heard a good deal during the past year about the new disease among the swine called necrobacillosis. We all know that necrobacillosis is an old disease, or one of the oldest. Yet this particular disease seems to be becoming more and more common among the herds of Minnesota, and as a secondary infection or as an infection coming along with hog cholera. I don't believe there is any more important phase of the situation to consider in that locality. In an investigation which I made a few weeks ago in Martin County, along the southern border of Minnesota, investigating seven herds, I found in two of them hog cholera and in five necrobacillosis. In one of these two there was a mixed infection, and it was in these cases of mixed infection, where serum is used and the results from it are very poor, that is where much of our trouble arises. To be sure, necrobacillosis is more common among the smaller pigs, but it is far from being unknown among the larger ones; and also it is among the smaller pigs where we have the most of our trouble. And as a secondary infection I think it should be carefully considered in connection with the treatment of hog cholera.

DR. G. W. DUNPHY: I would like to ask Dr. Cahill a question. Every year it seems something new comes up in regard to hog cholera. We get in the frame of mind where we think we can sit down and feel that we have mastered the situation, and that we have found out a system by which hog cholera may be rendered harmless to a certain extent. We get in a frame of mind where we feel we have the right system of immunity, and

every year some one comes up and apparently throws a monkey wrench into the machine and starts things going wrong again.

I did not hear Dr. Cahill distinctly, but I would like to know about the duration of immunity, about the length of time of the period of immunity that he gets by using the serum-alone treatment and then following it six weeks later with the simultaneous.

DR. CAHILL: I wish Dr. Dunphy would give me the prescription for that frame of mind. I have never been able to get it yet. It seems to me there is a monkey wrench in the gear all the time. Our experience in the east—again I am speaking only of eastern conditions—has been that if the method is followed as described in my paper, of giving pigs when six weeks old serum-only treatment, and not administering the simultaneous *within* six weeks, and then being sure you have a virus that is really a virus, and you use enough of it—not less than 2 cc under any circumstances—your immunity will last for life, the life of the average pig. There are registered brood sows that have been immunized four to five years, have traveled over the country, have gone under garbage feeding when grain was not available, and which have remained immune. And we have tested others with tests of virus and our immunity has remained.

I am simply relating the experiences as obtained under the present methods in Massachusetts, and where immunity does not fail to act. It may be a mistake to call it permanent immunity; it may be more correct to call it "lasting immunity."

Now, Dr. Fitch spoke of conditions in Minnesota. I am glad he spoke of that, because I don't believe there was ever a time when Minnesota's situation with regard to hog cholera was as critical as at the present day. I am not speaking of a control method, but of a diagnostic method. We could start a discussion that would not end today, about control methods and diagnostic methods.

There are as many losses today from hemorrhagic septicemia in swine as from hog cholera, and maybe more. It is urged as a point where the veterinarian in the field must watch every move he makes. You all know the lesions as displayed in that disease at times are so closely allied to hog cholera as to defy any man. It seems that before a man can be sure of his diagnosis he must prove it by laboratory methods.

Many in the middle west today are in terror as to the conditions that exist. The veterinarian will go in a herd and post one or two and find lesions in the lungs and call it hog cholera. There

are a lot of later cases of hemorrhagic septicemia in those herds that do not become apparent until something lowers the vitality of those herds, yet if you inject virus you get the same conditions as if you shipped your pigs to market, and it is immediately followed by an outbreak. That is not only puzzling to the man who has to do with the disease, but terrifying to owners.

DR. DEVINE: Some three years ago at a state veterinary meeting in New York I said I could not diagnose hog cholera in the field clinically with any accuracy at all, or any satisfaction to myself, and I questioned whether there was any man in the state who could; and some of my colleagues did not like that statement. I see as we go on Dr. Cahill is leaning a little more that way. I think it is a good thing, perhaps, that we learn more rapidly under that frame of mind. I would like to ask, however, what is the duration of the immunity conferred on the old pig? If we wish to ship a pig to the fair, what is the length of time of immunity in that pig as compared with the baby pig?

DR. CAHILL: My experience in that is very limited. There are practically no herds in Massachusetts where that condition is called for. Occasionally it does happen that a man has new animals just come into his herd that he wants to ship, and that must receive the simultaneous treatment.

I do want to say that as long as the doctor has said something as to my leanings, I am sorry he has not read some of my writings. If you will go to the records of the Bureau of Animal Industry you will find writings along that line for three or four years. It was possible in Massachusetts for us to study the conditions of hemorrhagic septicemia even previous to this time.

PRESIDENT TORRANCE: We have had a most interesting discussion on that subject.

DR. KINSLEY: I do not yet understand you. In this first column 200 pigs, immunized, were protected in six weeks and given a simultaneous treatment, and then in six weeks were given another immunity. How could they be given an immunity when they already had an immunity?

As I understand your problem of the suckling pig, you immunize the suckling pig by serum alone; but we are led to believe forty-eight per cent of them still had immunity up to the expiration of six weeks, and then you give the simultaneous treatment; and I don't see, with our present knowledge of immunization, how you could give a permanent immunity.

DR. CAHILL: By giving the simultaneous treatment in our baby pigs, at six weeks. Then there are a certain number of animals which do retain that immunity, and the simultaneous treatment should not be given to all baby pigs weighing from fifty to sixty pounds.

DR. KINSLEY: But some will still be immune?

DR. CAHILL: Yes.

DR. KINSLEY: How can you intensify that by giving simultaneous treatment?

DR. CAHILL: You could not be sure to do that, but some will retain immunity at the end of six weeks, but if you then give the serum-only treatment, forty-eight per cent are still carrying immunity, and for that reason this experiment was conducted—to show that treatment should not be given again in that way.

I made the remark a short time ago that there is a very small percentage which will break before they are ready for market, but a very small percentage will.

DR. CONNAWAY: I don't think we ought to leave this question without calling attention to some of the essentials of disease control. This leaves us in a large part of the country with possibly a false impression as to the best method of handling this disease, and ultimately getting rid of it. We have these same conditions which Dr. Cahill speaks of, in every western state; that is, in a small way. We all have our small areas of pens of garbage-fed swine around towns. He tells us that Massachusetts is one great big garbage pen. (Laughter.) These are not the conditions in the west. We have towns, we have districts where hog cholera has not been known for twenty-five or thirty years. And we don't want the impression to go out, from a paper like this, which will influence people on farms like that to use methods which will increase the cases of cholera. Hence the importance of emphasizing the importance of disease control—the methods of which are quarantine and disinfection. We must get at the source when an outbreak occurs, get at the source and try to stop it right there, as the Government people are trying in many states today. Try to keep it from spreading. Try, if possible, to avoid the use even of serum alone. Try, if possible, in that community to avoid the use of serum and virus. Now, there are places where we need to use both; and where they are applicable and necessary it should be done, but it should be done under proper control and by men who know how to do it and who will

take every possible precaution to see that the disease does not spread from those premises to other parts.

Now, I think that I can see one cause for the remarkable results which Dr. Cahill presents. I think there is not in this garbage-fed section any lessening, possibly, in the total death rate than what it is in other portions where inoculation, or where other methods are used. I think that a large—or some part at least of what he has called complications, and which have not lessened the death rate, are due to cholera. That is, in these hogs that have been vaccinated, they may have lost their immunity and may have actually died of cholera. Now, among our practicing veterinarians who have been vaccinating hogs, where they have immunized a herd some of them think that it reflects upon them and the serum they have used if that turns out to be cholera. Hence the tendency to find some other cause for the death. I don't say they do this deliberately, but because of the inability to make a diagnosis—and as the doctor from Iowa says, it seems as though we have fifty-seven different kinds—and it is easy enough to find some other trouble, or supposed trouble, when our hogs die after vaccination. Some of these do die of real hog cholera after vaccination by either one of these methods. I believe the Government men who are in this kind of work will sustain me in this statement: Serum is not one of those things that is perfect yet. The method of application is not always perfect. There are conditions under which this may be applied which will not give us results. The condition of the animal—an animal in these shipments, for instance, the shipments that have gone into Iowa, I believe many of those, Dr. Murphey, have actually died of cholera. The immunity is a relative affair, not absolute.

Texas fever of cattle—you know those raised in the southern country—do not have an absolute immunity. They remain resistant to that disease as long as they are not disturbed, but you put those animals on a long drive and then ship them, and maybe dip them at the other end, and many of those animals will show typical Texas fever.

So, we should not expect to get perfect results from our vaccination by either method. I want to mention some of these things so as to keep before us always these essentials to control. The destruction of the hog cholera virus is the problem of the sanitarians. Let us look forward to the day when we don't have hog cholera in this country. It won't be long before Texas fever

will be a thing of the past. I can immunize cattle against Texas fever. I have done it. I have immunized bulls against Texas fever, and they have lived. Dr. Dalrymple here has immunized cattle against Texas fever. But we saw we had not the ultimate solution of this thing. The ultimate solution was the doing away with the carriers of that disease; so, we must hold fast to the essentials to disease control.

DR. MURPHEY: There is one point that ought not to go by. Most of the reports that have been made here have pertained to the laboratory end of the work in hog cholera, and I had the pleasure of reading the paper of one of my colleagues a day or two ago on "Differential Diagnosis of the Diseases of the Pig," and it was pointed out that the practitioner must be a big factor in the control of these diseases; and while men are scared as to their conditions in Iowa, they are setting themselves to the work and studying postmortems. That must be the solution—the combination of clinical symptoms in the herd and in individuals, plus the postmortem findings; and I think that will help to solve many of these problems. That has been useful in solving most of the diseases that we have solved. The practitioners should report them, and often they give valuable leads to laboratories as to the symptomatology; and we ought not to lose sight of that in applying tests in hog cholera.

DR. AMLING: It has been my experience as to diagnostic media, from the State of Iowa we had two or three years ago several vials of feces sent on for examination, and a colleague of mine, whom I considered very clever, examined those and reported hog cholera. We also took specimens of the blood sent in to us on slides, and our reports were verified. There were no outbreaks there at that time. This was three or four months prior to the outbreak. These feces were taken immediately from the animal at the time of evacuation. I had a man on the ground at that particular time, and hog cholera, to my mind, was shown.

During hog cholera the organism is always present in the blood or the feces; and I am here to thank Dr. Cahill today, and I owe him an apology with reference to a slide shown in Kansas City last year. You remember, there was a little shoat there. I requested a slide be prepared and a report on that condition, and it was identical, the same as on others. Through the blood hog cholera will be shown, first, last and always.

I take into consideration the topography, the atmospheric condition, the altitude and so forth as having a great importance on the vitality of an animal in various parts of the country; and I am many times governed by those conditions.

TUBERCULOSIS ERADICATION.*

JNO. A. KIERNAN.

DISCUSSION.

DR. V. A. MOORE: It seems to me that we ought not allow such a valuable paper as this to go by without some discussion, although the hour is getting late. There is just one point among the very many worthy of commendation in this that I want to emphasize for just a moment, and that is this: The work that the private practitioner can do in helping this cause. I pointed out in a paper before the State Agricultural Colleges and Experiment Stations in 1910 the importance of sound herds as a unit to deal with in the interstate control of tuberculosis. It is only the herd—not the test of the individual animal from the infected herd—but the animals from the herd that is sound. I think that feeling has not only slowly spread among veterinarians, but largely among breeders of pure-bred stock. Now, this accredited herd question that has come is simply a continuation of that principle under official supervision.

Now, the way, it seems to me, in which the veterinarian can help most is to encourage his clientele to establish sound herds. The question of officially recognized herds has been discussed in our state for a number of years, and a plan that has been proposed—that is, talked over; it has never come out officially—is that a man who had a herd of pure-bred cattle, or any other herd, and wanted it approved or guaranteed, so to speak, officially, must proceed to get the disease out of his herd through the aid of his local veterinarian, and he can then go to the official with his statement that “Here is my herd. I want it under this system accredited. I have had it tested by the local man and have located the tuberculous animals, and now have had one, two (or three, as the case may be) tests (or years), and have had no tuberculous animals.” And he turns this herd over

*See November Journal, page 107.

to the officials for this accredited system after he has done all he can alone. Now, if that can be done the veterinarian in practice can get these herds of his clientele cleaned up.

As I pointed out yesterday, the work that Dr. Bang has done—the owners have been instructed and educated to get rid of their infected cattle, and then the owners have been taught it is possible to keep the disease out, which many of them at present do not believe.

When that time has come, these herds can be turned over with the minimum amount of cost, and will be a tremendous help to this great movement, which I believe is one of the greatest things that has been introduced in the eradication of tuberculosis—to get these clean herds; that is, accredited herds; and I sincerely hope that the veterinarians of these states and the local practitioners will do all they can to see to it that the owners of tuberculous animals will be so instructed as to come up with clean animals and have clean herds.

I certainly hope every one will take an interest in this very important movement. I thank you. (Applause.)

DR. HART: I am interested in tuberculosis. This is practically the method used in California, and I am glad to hear from Dr. Kiernan's paper that the Bureau of Animal Industry recognizes that different methods will have to be taken, depending upon the percentage of tuberculosis that exists. It will be comparatively easy to have stringent regulations in territories where little exists. In California we have a great amount of tuberculosis, and the antagonism increases according to the percentage in which it exists. Where we get into a community where there is a large amount of tuberculosis the owners of live stock will spend a lot of time, energy and effort to defeat any campaign that is started.

We need a great amount of educational work, and that will not consist of gathering together a number of farmers and talking to them. Where tuberculosis exists in such a high percentage that we have to kill off a man's whole herd and make him get out of business, we will not have much success in getting a campaign started. We need to establish one hundred per cent tuberculin-tested herds, and thereby take the odium off it. It is necessary to have one hundred per cent herds established. We have done that on a large scale with several herds of cattle in California, and from these herds have raised hundreds of healthy animals during the six years this has been carried on. If there

had been any regulatory measures held over that owner he would have fought to the last ditch. But he had the original agreement to fall back on, that he could withdraw at any time, and he knew that; he also knew that he had five or six hundred tuberculous cattle in his herds. Now, one man has two herds consisting of one thousand head of healthy cattle, and had reduced two tuberculous herds to one tuberculous herd. That was accomplished because we had the agreement with him that physical cases would be removed as rapidly as they developed. That has been very successful with one man in California. He was the largest live stock owner in the county. But we have other counties where we need similar educational methods to be used. It is hard for a man to go out and buy cattle there and be sure he has a healthy herd.

Therefore, where we have a few healthy herds the important thing is to be able to know where our tuberculous animals are and where our reasonably healthy animals are, and take such care of the offspring that we are reasonably certain to know we will have a small percentage in that offspring, and it will work up in the course of years to be an accredited herd. And I feel that where tuberculosis is most prevalent and the greatest need for work at present exists, that some educational work carried on as outlined above will result in cleaning up the herds in these areas. And if California is going to enter into this campaign, that is the only reasonable plan, as has been done in Los Angeles County, showing the possibility of having a man change his tuberculous herds to healthy herds without being bankrupted in the process. (Applause.)

DR. AMLING: If you show a man you are going to protect his herd, I don't know any man who will fall quicker for it than the live stock and dairy man. It is impressed on us today to educate our clients and stand with them on the same ground as a protector and not as a disturber of their interests. The people at large demand protection from us in sanitary measures in reference to this very same condition; and as the gentleman from California spoke here, I think that is the only logical method to pursue along those particular lines.

DR. W. C. SIEGMUND: John Henry Miller, of Peru, Indiana, whose son, Walter H. Miller, was at one time the Secretary of the Short Horn Breeders' Association, fifteen years ago entertained the hope that pure-bred short horn cattle would be sold with their pedigree and with the record that they were derived

from tuberculous-free herds. It was fifteen years ago he made that statement.

STANDARDIZATION OF BLACKLEG VACCINE.*

DRS. L. W. GOSS and J. P. SCOTT.

DISCUSSION.

DR. EICHHORN: I think Dr. Goss ought to be complimented on the extensive work he has carried on in the standardization of the products which are being used to a considerable extent for the immunization of animals against blackleg. The difficulty of standardizing blackleg vaccine, whether filtrated virus or aggressins, is very great, and I only regret that Dr. Goss has not offered an absolute method by which any of his products can be standardized; but no doubt he has offered a possible solution by which it might be possible to determine the value of the product, those blackleg products.

I also enjoyed and appreciated his statements with regard to the immunizing value of filtrates and aggressins, and further that guinea pigs are not a satisfactory index to determine the immunizing value of these products. It will no doubt require a considerable amount of work before we can establish what the immunizing properties are of both the filtrates and the aggressins. The work which has been done with regard to gas gangrene I think is of great value in opening up the experimental value of blackleg filtrates and also aggressins. We know it is possible to produce strong toxins of the gas gangrene organisms, which have immunizing properties when injected into animals; and it has been carried out to such an extent that at the present time those engaged in the production of biological products are preparing tables of results with animals injected with the virus.

Substances which are neutralized by the serum—I would like to know whether this neutralization when carried out on immune serum has been any lower than when carried out with serum of the normal horse.

DR. REICHEL: I should like very much to discuss Dr. Goss' paper. I think, also, Dr. Eichhorn brought out that we are getting a little closer to standardization of these products, but I feel that Dr. Goss up to the present is on record only with a

*See December Journal, page 234.

test that might be considered a protective test of immune serum—that is, anti-blackleg serum. It is the testing of the serum against the living organism—I don't think that that will eventually be the standard test for the testing of anti-blackleg serum, because it is very difficult to regulate the effective dose, very difficult. Even in Dr. Goss' work he uses two forms of infective dose, the mostly virus dose and the culture dose. He has demonstrated also that the washed culture differs from the unwashed culture. There are three possibilities there, and they are very, very unreliable, I feel.

Dwelling upon the development of toxins in connection with the blackleg bacillus, we must try very hard to demonstrate the distinct toxic value of the toxin. We can call it filtrate or aggressin, artificially, but we must test the culture there, which can be done by testing on guinea pigs in graduated doses. Then we should test out the anti-toxic value of anti-blackleg serum. I think that will be of more value than the serum test. If we test out the suspension of any blackleg serum, then we will have a test for the artificial aggressin or filtrate. I am firmly of the opinion that the artificial aggressin differs from the natural aggressin only in the fact that the toxin in the artificial aggressin is covered. For the artificial aggressin and the anti-blackleg serum we will have to work for an anti-toxin test, and I think that is where lies our problem in standardizing these two products.

I should like to ask Dr. Goss why he allowed an interval of fifteen hours between the injections of two materials. In tests we have made we have found it a very satisfactory procedure to limit the infectivity dose to two drops of fresh exudate from a guinea pig, and exposing those two drops to variable doses of the anti-blackleg serum, starting with two-tenths cc and going up to 1 cc, incubating it for an hour, and afterward injecting that into guinea pigs. That will give you a reading as to the value of the serum, a good serum given in a dose of two-tenths cc against two drops of that infected material. That infective material is very stable. You can always get fresh exudate from a guinea pig that has just died, and in that way you can standardize your serum dose. But, as I said before, I don't think that is a reliable test for the anti-toxin product.

DR. BREED: I would like to ask Dr. Goss if he knows of any record of the blackleg virus being isolated, getting it in a dry,

powdered form. I should also like to ask Dr. Reichel if this exudate from guinea pigs is free from organisms or not.

DR. GOSS: In reference to the use of immune serum, we have used serum from a horse immune, not from a normal horse. That work, however, was done before we approached a point that was satisfactory. Since then I have not tested. The normal horse blood I thought more easy to procure than under other circumstances. I don't know the value of the immune horse serum to this extent.

In regard to Dr. Reichel's question, the fifteen hour period in arriving at these experiments—I think you will all appreciate that usually a great many tests run, of all kinds, which do not seem to come out satisfactorily. In various tests we fell upon fifteen hours as a satisfactory time for the serum to produce passive immunity. That is the only excuse I can offer for using fifteen hours.

As to the immune serum being tested with toxin, or, likewise, a toxin being tested by the use of an immune serum, we have been testing, as shown, our immune serum against virus—immune serum is usually used against the virus, which, of course, develops there a toxin. In the field it has been very successful when we have produced it by testing it in this manner; and on that account we have not changed the method for testing it, and as the immune serum has no great future, as I can see, I have not seen fit to change the test—that is, to test it against the toxin. Another reason is, we have not been able to develop a uniform toxin, and have tested our toxins against one serum which would be used for them.

In answer to Dr. Breed, we have not evaporated the toxin itself.

CERTAIN ASPECTS OF THE PATHOLOGY OF SPAVIN.*

F. A. GOLDBERG.

DISCUSSION.

DR. GEORGE H. BERNES: I don't think I can say anything on this paper except that it is an entirely new departure, as to the cause of spavin. We were taught thirty or forty years ago that spavin was always caused by sprain, always traumatically carried.

*See November Journal, page 136.

Now Dr. Goldberg demonstrates that there are larvæ and many other causes; and it would seem that any pus activity, in any part of the body almost, might be productive of spavin formations; and that is the point which I think Dr. Goldberg has pretty clearly demonstrated. To me it is entirely new. I never thought of it for a moment. But it seems quite reasonable, because we do know that pus collections in almost any part of the human body will produce rheumatic arthritis—unfortunately, I am suffering from an infliction of that kind temporarily. I have not given the subject any thought. It is brand new to me.

I was much pleased to hear the paper, and was greatly interested in it. Men who have given the subject more attention and study than I have are probably in a much better position to discuss it.

DR. PIERCE: He mentioned umbilical infection, which may lie latent for two years or more. I would like to know if there is any way in which to anticipate that or avoid it.

DR. MURPHEY: One or two questions I would like to have answered. I certainly enjoyed this paper very much. One question is with regard to the primary lesions of necrosis which were infiltrated with lime salts. The statement was made that the process was not arthritis primarily. I cannot understand how the lime salts got in there otherwise.

One other thing I would like to know is, whether it is considered that these conditinos are mostly ostitis or arthritis primarily. I did not hear quite all of the paper.

DR. GOLDBERG: Spavin is a chronic condition, and the final outcome of it is a complete osseous ankylosis of the hock joint. In order to bring this about it requires a considerable length of time. We will assume that the cause is an infection. If the infection is severe, it takes but a short time for lameness to develop, and for visible structural changes to occur in the joint. If the infection is mild, it takes a considerably longer time, perhaps a year or more.

Another thing to be considered is that the changes in the joint may be quiescent, as I pointed out. They were active at one time, but they are now merely history. In other words, bone and cartilage do not proliferate very readily. They may heal apparently—that is, there may be incomplete healing—especially if you have an erosion in the articular cartilage. That erosion is most likely to remain even after the process has subsided, and after the irritant has been removed. In that way it is possible

for an umbilical infection, if it is very mild, to be carried into the joint when the animal is very young, and it may be a year or two before the process of spavin—that is, osseous ankylosis—has been fully developed. In many cases complete ossification is not present.

The manner in which lime salts are deposited in tissues is not yet settled. Many claim it is a sort of saponification. It is a chemical process, at any rate. Lime salts are usually deposited in tissues that have become necrotic, and calcification is one of the sequelæ of necrosis. Calcification in the articular cartilage occurs very often. The lime salts are not deposited from the bone directly; it is simply a chemical process that takes place in the tissue, perhaps through the circulation. It may also take place in an exudate of long standing, where the young connective tissue cells often make use of the lime salts, depositing them into their intercellular substance and thus be transformed into bone. That is how ossification is said to be brought about.

Eberlein claims that all spavins begin as an *ostitis* primarily and work up into the articular cartilage. In most of the cases I have seen—and I have seen nearly a hundred cases—the origin seemed to be in the joint. In the later stages it is impossible to tell whether the process began in the sub-chondral bone, or in the cartilage. In order to determine this point the process must be studied in the very early stages.

Articular cartilage is non-vascular tissue, and a great deal of work has been done on inflammations of the cornea. Mild irritation on the cornea calls forth some wandering cells, and proliferation of fixed tissue cells, while more severe irritation calls forth blood vessels, which grow into the cornea from neighboring vascular tissue. It is possible that the articular cartilage reacts to an irritant similarly to the cornea. It is possible, therefore, that the vascularization of the articular cartilage is due to an irritation in the joint and not in the sub-chondral bone.

DR. MURPHEY: The necrosis was shown on one slide to be primarily arthritis, and I asked Dr. Goldberg the method by which the lime salts got in at this point as shown on that slide, whether they did not come from the bone through the circulation. The circulation in the cornea is not to be compared here.

DR. GOLDBERG: The circulation of the articular cartilage is not very clear. Some have demonstrated spaces between the cartilage cells, but others have disproved it. I attempted several experiments on this point. Various dyes were injected into the

joints of rabbits and the joints were subsequently examined. It was found that the entire articular cartilage was stained with methylene blue ten minutes after this dye was injected into the joint. It was impossible to retain the stain in the tissues so that they might be examined microscopically. This was due to the strong acid necessary for decalcification of the bone. Acid as well as alkaline dyes were used with the same results. At present it is considered by most histologists that the nourishment to the articular cartilage comes by means of the blood vessels that are in the sub-chondral bone, and that the cartilage imbibes the food from the tissues suited to it. Calcification in the articular cartilage in this sense may come from the bone, but this is not due to a primary osteitis.

DR. BIRCH: In regard to the treatment of spavin, it is well known that the first principle of the treatment of spavin is: rest. And in looking at some of those slides, where that erosion has taken place, I think it is a very good object lesson as to why rest is desirable under those circumstances.

There is one other thought. Among cattle or horses, I could not say which is the most likely to umbilical infection; but the thought has occurred to me, in comparing the two, that if spavin is due to umbilical infection it seems that the umbilical infection in one should be comparable with that in the other, and we should have something like the same amount of spavin, you might say, in cattle as in horses, whereas, as a matter of fact, we do not have the same amount apparent at least. Whether that is due to the fact that the horse at two or three years of age is put to work, and is subjected to greater strain; and also to the fact that we do not pay so much attention to lameness in the cow, I don't know. I should like to be informed.

DR. GOLDBERG: I should like to corroborate Dr. Birch, in that spavin is at least as common in cattle as in horses; it may not be in the form of an ossifying periostitis, but if you examine the joints of a number of cattle, you will find they are affected by the same changes as those described as spavin in horses. I do not think that in this country there is so much ankylosis of the hock joint in cattle as in Europe. This is possibly due to the fact that cattle there are worked more than they are in this country; but the various stages of spavin, you will find, are at least as common in cattle as in horses.

SWINE PRACTICE.*

C. COURTNEY McLEAN.

Prefatory remarks by Dr. McLean:

I am not going to take up much of your time on swine practice. I am simply going to tell you what I do, and perhaps I can tell you a different method than what is taught, and I trust you may get some benefit from it.

The sow is undoubtedly the Queen of the Farm. There is no question whatever that she deserves more recognition than any other animal on the farm today. As I stated, an animal which is capable of reproducing 2,000 per cent—which is frequently done, a sow having two litters of pigs, and ten pigs to a litter, and raises them, is certainly a better investment than anything you have on the farm.

She requires gentle handling. The sow should not be bred as young as she is usually bred. She should not be bred at eight months old. It is a mistake. The sow should be nearer maturity, and ought not to be bred, especially in pure-bred stock, under a year old. The great losses resulting from farrowing is where they are bred under a year. I read an article in "Swine Herd" the other day which stated that in the State of Iowa a million are farrowed every year, and only seven per cent of them reach the feed lot on account of chills and other conditions that contribute to such a loss.

The farrowed sow should be in a pen that is constructed with a farrowing rail. There should be a farrowing shelf or rail outside the pen, to prevent her squeezing the pigs when she lies down. At the present time there are too many things contributing to the nervousness of the sow. Sometimes it is impossible to get in at the farrowing time. When a sow is nervous and humps up when approached, it is dangerous; she will lie down on the pigs. The proper course is to take a stool and sit down behind the sow, and have a jug of hot water in a basket and put the pigs in a basket as each one comes away. After the after-birth passes you can replace the pigs.

DISCUSSION.

CHAIRMAN COOLEY: In your experience in dealing with the municipal question, with reference to our municipalities, what do you say with reference to garbage?

* See November Journal, page 90.

DR. McLEAN: A garbage-fed hog is not as good as a feed-fed hog. I make this explanation: A hog raised under proper condition should weigh 100 pounds at 100 days old; the hog that has gained one pound a day is doing well. I have never yet had a garbage-fed hog to reach that.

There is danger in raising hogs on garbage, because you can't have the proper supervision over the collectors of the garbage. The foreign matter put in garbage, like tin cans, glassware and knives and forks and nails and everything imaginable, are anything but beneficial to the hogs. In enumerating the diseases of hogs I should have mentioned ptomaine poisoning. I have seen also a number of cases where hogs have eaten foreign bodies like nails and tacks and pins. The statement that was made by the previous speaker (Dr. Dimock) in regard to brine was a very truthful one. Salt in any quantity causes a violent enteritis in hogs, and kills them very shortly.

I made a statement very surprising, perhaps, to you gentlemen; but a hog is so much more intelligent than some imagine that if you pay the proper attention to the intellect of a hog it will repay you many times over. A hog is very nervous. With severe abdominal pains a hog will lie down and you can't get him to get up. He will suffer intensely. I don't believe there is a man living who can diagnose pneumonia in a hog, or any other condition; because, under any abnormal condition, the hog will breathe so rapidly you can't tell what it is.

DR. B. D. PIERCE: Do you feed the garbage raw or cooked?

DR. McLEAN: I feed it raw, but in most cases it is already cooked, especially the garbage from restaurants.

DR. PIERCE: I refer to places where the garbage contains orange peels and tin cans, and they boil it all up.

DR. McLEAN: My experience is that they throw in everything.

DR. PIERCE: The tin cans won't hurt so much as the orange peel, will they?

DR. McLEAN: A hog that will eat orange peel is a pretty hungry hog.

DR. S. B. HENDRON, of Lewistown: I have been interested in these papers because I have been called upon to treat hogs in my territory. There is one point the Doctor spoke of, and that is in regard to farrowing the maturing sow. I believe the greatest loss has occurred along that line. Up to within a few years ago I believe we all allowed those sows to die—not only myself, but

other practitioners in my country. We now resort to the Cæsarean section, and we don't hesitate very long about it. I myself have given up using instruments on parturient sows. I have all the forceps and hooks for that purpose, but one can't use them; you get hold of the pig to pull him out, and you pull his head off or his foot off—that is all you can do. Parturition instruments are useful sometimes. When I am called upon to treat a parturient sow I first see if it would pig, and sometimes it will have two or three pigs dead, and sometimes all dead.

If a sow is weak and cannot stand an operation, it is foolish to operate. Our procedure, when mature, is this: If you are called upon to see a sow that is a good subject and in good condition—perhaps has some pigs, and perhaps has not—don't wait, but go right ahead with your preparation for the operation. I have them prepare a table and have it good and high—take a door off the barn and nail a board across; have them bring two big pails of hot water and a scrubbing brush and a towel; then get your cat-gut and needle. I have found that half the time was used in getting the hair from the wound. I don't shave the hair any more, but thoroughly scrub and disinfect.

Then, have three men. Always tie the hind legs with a rope, and then fasten them near you. If you fasten them away, then when a sow struggles she pulls away from you. I always have three men; I put one on the hind part, one on the head and one to govern the front legs. Then you have no trouble.

I make a bold incision, and am careful to keep away from the lumbar region. Make a bold incision because you have tough skin to cut through. First you go to the peritoneum; separate the first layer of fat with your fingers; make a hole in the peritoneum, always cutting out. If you have the incision too deep then your small intestine will come out. If you allow the sow to force the small bowel all over the table and all over your herself, you have too much time required in putting it back. Speed is the main thing in the operation. Close the wound up and get done with it. Have the incision just large enough for the pig to come through, and no larger.

The point the Doctor made about the bladder being ruptured is true. When I insert my hand to bring the pig out, with the uterus, the bladder is probably distended, and you can squeeze it out, and it gives you so much more space.

DR. McLEAN: Don't you use an anæsthetic?

DR. HENDRON: I usually use a half tablet of H. M. C., sometimes a whole one. Grasp the pig and bring it out. I generally bring out the whole uterus, so as not to overlook one pig in one of the horns. I have two towels saturated with disinfectant, and lay it over the whole table and bring the uterus out. Have a basket to put the pigs in. In the majority of cases you will have live pigs. Remove them as quickly as you can. Suture your uterus with catgut. I have used silk, but catgut is as good. Bring the two serous edges together, so that in a few hours they will start to glue fast. If you put the two raw edges together they won't be so even. I allow water from a dipper to fall on the uterus. In putting it back be careful to get it as straight as you can. It is a little difficult to do that sometimes, but if you place it as you think it should be by putting back first one horn and then the other, and you will put it back pretty straight. Then I take braided silk and do not suture the peritoneum or muscles, but from the bottom up, and draw it together and tie it. I use oxide of zinc ointment to rub over the wound after that, and give the man a little to use each day; and usually it acts very well.

That operation is being done every day. I think that during the last week I did three. I don't often go back to remove the stitches, but tell the man that after it is healed up and he is satisfied it won't break out, to just remove the stitches. Many of my cases I don't see again, because they are so far away. One man I asked how his sow made out, said she was all right, she went up into the mountain for three weeks, and when she came back the stitches were gone.

The sow does not eat very well for a few days. I keep them on a liquid diet until they start to feel well. I think if that operation was practiced more frequently fewer sows would die. But I want to say, don't operate in a hog pen, because if you do you will fail. That has been my experience.

DR. BERNs: Why wouldn't it be fully as well to amputate the uterus and put a ligature around the uterus instead of taking the trouble of suturing the horn?

DR. HENDRON: I did at one time, but my success was not so good. I did amputate the uterus, originally, but the percentage of success was not so great.

President Cochran of the New York City Veterinary Medical Society gave a timely address at the January meeting of that body.

DIFFERENTIAL DIAGNOSIS OF THE DISEASES OF THE PIG.*

W. W. DIMOCK.

DISCUSSION.

DR. KINSLEY: Mr. Chairman and Gentlemen: First, I believe you will agree that the author should be complimented on this splendid paper. It has thrown light on a subject that some have been asking for for many years.

It was intimated in the paper, what has been known long since, that practically the only disease considered in swine is hog cholera. There has been some plea with the practitioner, and others in a position to know, that the other diseases of swine should be given consideration; and I was certainly pleased to have had the privilege of listening to this splendid paper.

There are some things that perhaps are subject to discussion, in what has been said. First of all, the general statement concerning the hemorrhages that are ordinarily considered as lesions of cholera, perhaps needs some discussion and perhaps some modification. There are those, you know, who claim hog cholera is practically a lesion-less disease in its pure form, and that the lesions usually associated with cholera are the result of complications rather than the result of the virus itself. We can accept or reject that statement, as we wish, and I wish to especially call your attention to the statement concerning the petechial hemorrhages on the kidney. They are, in my judgment, not evidence of hog cholera. We find hemorrhages associated with cholera when there are usually or frequently no other principal complications, but bear in mind those hemorrhages are also found in infections and in the group that the Doctor has designated as mixed infections particularly.

Petechial hemorrhages are also found in the septicemia form of necrobacillosis, or associated with the bacillus of necrobacillosis, and perhaps in other conditions. In making the differential diagnosis of diseases in swine this should be borne in mind. And this should be obtained in the history. It is not always possible that simultaneous immunization will prevent these lesions associated with hog cholera. The swine may die of some other complication, and the diagnosis given as hog cholera by the one making the diagnosis.

*See January Journal, page 321.

In hog cholera, clinically, there is ordinarily a rise in temperature, the hog cholera victims having usually a temperature of from 105 to 108 Fahrenheit. In hemorrhagic septicemia it is hard to find that temperature. It rarely is above 105 Fahrenheit.

One other statement, in regard to the lesions mentioned under hog cholera, is in regard to the button ulcer proposition. I don't think it is anything else than a complication of hog cholera. I believe it is usually due to the bacillus necrophorus and sometimes to another organism. So, I don't believe the button ulcer should be considered as typifying hog cholera.

In the pneumonia discussion the Doctor in his paper has three or four types. In the one I am pleased to call secondary pneumonia, associated with cholera, there is usually not much difficulty to differentiate it from hemorrhagic septicemia pneumonia. The hog cholera pneumonia is a purely croupus type, usually involving the acrotic or cephalic lobe or portion of it, whereas, in hemorrhagic septicemia we find the larger portion of the lung involved. We may designate it as the ordinary type, but usually with an extravasated exudate similar to pleuro-pneumonia in cattle.

The hemorrhagic disturbances in swine are extremely difficult to diagnose clinically in the ordinary swine because of the thickness of the chest wall, due to a layer of fat. So that, I hope some of our good clinical diagnosticians will give us a definite method for determining pneumonia in swine. Personally, I have found it almost impossible to make a satisfactory examination of the contents of the thorax clinically. If any of you have any means of doing it I certainly would be glad, and I think others would be glad, to hear it.

I thank you, and wish to compliment the Doctor on his splendid paper. (Applause.)

DR. BIRCH: I would like to just say, with regard to making the clinical observation of swine, that I think a bad mistake is often made by slapping our hands and stirring them up. By so doing we automatically increase the pulse rate and respirations, and if we chase them long before catching them we also increase the temperature, possibly as much as two degrees, in a short time. I don't want to discourage any one who thinks he can make the same observations on a hog as he can on a horse, but I don't know any one who can carry it out. As Dr. Kinsley has said, the walls of the thorax are so thick. I don't know any better

method of diagnosing pneumonia than by making the hog walk some distance, and then observing the respirations.

In making observations of tissues in pigs, I have frequently observed in pig No. 1, then No. 2, No. 3, No. 4, No. 5, No. 6, No. 7 and No. 8; and then starting in with No. 1 again—it is surprising how high the temperature has risen just catching the pig in the pen. We have raised the temperature in a shaded alleyway, with the atmospheric temperature at 70 degrees—I would not want to quote the exact time and exact increase in temperature, but it was more than two degrees and the time of chasing the pig was less than two minutes.

With regard to what was said in the paper about observing the lesions—the difference in lesions, whether a hog is bled out for examination or whether he has died, there is a very important distinction to make in making the diagnosis. It is very easy to assume on microscopic examination that we have infection in a gland where a hog is not bled out, whereas, we would otherwise find it was hyperæmic and would disappear if the hog had been bled out.

In hemorrhagic septicemia or that form of swine plague—I don't know how that has been done, I would like Dr. Kinsley to explain how that has been done and who has done it. We are not sure we have the filterable virus present. In one herd we started on—and the reason we started the work, in fact, was because we thought we had a pure hemorrhagic septicemia infection. We killed rabbits with the bi-polar organism. The serum treatment did not seem to have much effect on the progress of the disease throughout the herd, but we filtered the virus and filtered the blood and injected filtered blood in susceptible pigs, and we produced hog cholera.

In other cases we killed, although swine plague was present, we found the disease was from filtered virus, and one would certainly call that an outbreak of swine plague, and it certainly was not.

With regard to the button ulcer, in establishing there the filterable virus we have two things to establish: First, how it was contracted; and, second, the length of time from the first sickness of the animal until this examination was made. The virus does not under ordinary circumstances lose its virulence—it stays in the blood at least a limited time; whether the examination for virus was made from the blood or not, I don't know. I should like to know.

DR. ROBERTS, of North Carolina. I would not want to be pinned down to make a positive statement that there were no such things as lesions produced by the filterable virus, but through twenty years' observation on pigs supposed to die from hog cholera I have found that if the lesions are produced from filterable virus they are very few and far between.

I believe the speaker who preceded me struck the keynote in regard to the lesions supposed to have come from filterable virus. I believe we have very few of these so-called mixed infections, infections that are in themselves pathogenic, without some pathologic condition in the animal making it susceptible, or the organisms themselves becoming pathogenic and thereby producing the lesions attributable to hog cholera.

I want to say, for one, that I don't see for the life of me how we can offer this filterable virus except to get button ulcer from them or hemorrhages from them. I am not stating facts, but I am stating what has been my common belief, and I believe the logical way to reason the effect from what we call cholera, what are called lesions due to cholera, and what are really lesions due to other conditions than the cholera. And I don't believe these lesions would be present if the animal's condition or some other circumstances did not render the animal susceptible and pathogenic for it.

CHAIRMAN COOLEY: I am satisfied to say we have listened with very great pleasure to this fine, exhaustive paper on this subject, as well as the discussions on it; and that they will be of great benefit to the man who is in general practice and has a great deal to do with hog cholera work.

DR. MURPHEY: There is one thing in regard to hemorrhagic septicemia—a man had thirty sows, and 210 pigs; and he came in and said he lost one sow and seven pigs. He said they were sick, but they did not act just like cholera; they seemed to have something the matter with their mouths; they were champing all the time, and the symptoms described in this paper under hemorrhagic septicemia were present. A bi-polar organism was found, and the pigs not showing symptoms were vaccinated with hemorrhagic septicemia vaccine, and the sick pigs and sow were treated with anti-hemorrhagic septicemia serum. There was one sow which died after the treatment was instituted. That was the second case of pure, uncomplicated hemorrhagic septicemia we had this summer to deal with, and I don't doubt we have hem-

orrhagic septicemia existing in Iowa as a disease separately from hog cholera.

DR. BIRCH: I would like to ask Dr. Murphey what the ordinary death rate in hemorrhagic septicemia would be when allowed to go without treatment.

DR. MURPHEY: In the first outbreak it was some time before treatment was instituted—which was only a vaccine, no serum, and the loss was about 15 per cent. But sanitation was instituted at once on the first farm, and it was impossible on the second farm.

LAMENESS OF OBSCURE ORIGIN.*

GEO. H. BERNs.

In introducing his subject, Dr. Berns had the following to say:

The horse has no longer the center of the stage, and very little has been said about equine surgery and equine medicine at this meeting. However, there are still some horses left, and some of us still feel some interest in the horse.

When I accepted a position on the program, when I was asked to prepare some simple, practical little saying on the subject of equine medicine or surgery, it occurred to me that lameness would probably interest some of you. Having been in the habit of referring to all lameness that is hard to diagnose as "obscure lameness," I have, from force of habit, no doubt, referred to my title as "Obscure Lameness and Some of Its Causes." But it is a misnomer. The lameness is not obscure, but the origin and its causes. Therefore, I would change the printed title to read "Lameness of Obscure Origin and Some of Its Causes."

(On page 221 of the December Journal, after the sentence "In cases where one heel and quarter were contracted, the bar and sole on the affected side only were trimmed down." Dr. Berns interpolated as follows (but which did not appear in his manuscript), "We used the Roeberge spring for many years, because we had no other. The principle was all right, but we improved their efficiency very, very materially by leveling down the sole, by leveling down the bars until they yielded to the pressure of the thumb, and then substituted an artificial sole and an artificial bar, so to speak. The artificial sole was substituted by the intro-

*See December Journal, page 217.

duction of a heavy bit of leather over a packing of oakum and tar; and in this way we were successful in restoring the feet to a normal condition.”)

DISCUSSION.

DR. R. C. MOORE: I certainly appreciated Dr. Berns' paper. While it is a subject we do not have to deal with as in former days, nevertheless we have not yet outlived its usefulness. We have many good horses left, and as long as we do have them this will be an important matter.

I was glad to hear Dr. Berns lay stress on the necessity of paring the foot after taking away the horn tissue. My experience has been that after taking away a large amount of the horn tissue, whether on the sole or the side of the foot, the horn tissue soon dries; and no matter how thin it can be pared the hardness of that tissue will have increased in a few days, and it will probably become just as detrimental to the underlying tissue as the heavy wall was before.

Dr. Berns has clearly carried out the thought—to protect that by a pad until the horn tissue becomes thick enough to protect the underlying tissue from atmospheric conditions, et cetera.

DR. TORRANCE: It is not practical to put the spring into the horse's foot without tightening. The ordinary irregularities of the feet, et cetera, will cause those springs to become so jammed by constant hammering that we are in danger of losing them. The leather is as much used and needed for them as for keeping the tissue moist. I believe the packing and moisture have almost as much beneficial action as the springs. I have used the Mackey spring for a horse which had a real sharp pinched heel. The Mackey spring, as made in Baltimore, is considerably superior to any Roeberge I have ever seen, and I have had a lot of success by using the Mackey springs and then turning the animal out.

I have put them into the heel when it was so sore the horse could hardly stand. And I have put it behind the heel three-quarters of an inch, and sometimes more, and have never put it in that I did not keep the original shoe, so as to show myself, as well as the owner, the change.

DR. HOPPER: I enjoyed the paper as presented by Dr. Berns. I might say I have had some experience along those lines. In severe cases of contraction I do not follow the method of paring out the sole. I think it is a great mistake in opening your heels. My endeavor is to get that frog and wall to be a common mass.

Dr. Berns mentioned contractions, either inside or outside. I have never been able to find how a spring is able to correct that condition. It was suggested by our mutual friend, McDonaugh, and was practiced very largely by us—where we had an inside or outside contraction—on that particular side the spring was taunt. The other side was fastened in the wall, and a clip placed directly at the heel. We must quite understand that the spring is to avoid any strains, and it will equally spring the normal and abnormal sides; and the results are negative—you don't correct the condition. But by placing a clip in the inside of the heel of the shoe on the affected side—following that method we absolutely could correct contractions at any time and at all times. I found that very successful.

Dr. BERNs: I don't know whether I made myself perfectly clear on this point, but I certainly do not want you to harbor the impression that I favor opening the heels under ordinary conditions. On the contrary, it is one of the worst things you could do. But where you insert a spring your spring does not have very much chance to expand on the foot unless you open the heel; and it is a perfectly safe procedure while the spring is in the foot, but the moment the spring is removed that opening of the heel is certainly dangerous.

Dr. Hopper tells us that by placing a clip on the inside of the heel of the shoe on the affected side it will have a tendency to prevent contraction—by leveling off the upper surface and placing a clip on the inside.

Dr. HOPPER: I place my clip on the normal side and just carry the shoe out there to where it should be.

Dr. BERN: That principle I have never adopted, but we have been fairly successful in expanding a contracted heel, when it existed on one side only, by extending down the bar on that side, and thinning down the sole on that side, until it will take pressure by the thumb; and the spring had a better chance of expanding the side.

SOME IMPORTANT POINTS IN CASTRATION AND SPAYING.*

WM. M. BELL.

Before reading his paper Dr. Bell made the following introductory remarks:

The first point is, I have found it very handy in my card file to make a list of the equipment and instruments for certain operations, and consult that list before doing an operation of any kind, a castration or whatever it might be, and see that I do not find myself at the place of operation without some important instrument.

I carry a bandage in hot weather, when I have much operating to do, to keep above the eyebrows and glasses to prevent the perspiration from obstructing the view. Also, in our country, if we have a bunch of horses or mules that are sometimes wild, I carry three lassos, and have practiced enough to become somewhat expert. I throw the three lassos, and leave it to my assistants to carry out the twitch.

CASTRATION OF THE HORSE OR MULE.

NECESSARY EQUIPMENT.

Overalls, operating gown, bandage, lasso, twitch, casting harness, pans, soap, clean water, towels, hand brush, nail cleaner, antiseptic, tincture iodine, absorbent cotton and carbolized oil.

INSTRUMENTS.

Castrating knife, emasculator, ecraseur, needle and suture, hemostatics, aspirating needle, rubber tubing and bulb syringe, hernia clamp.

PREPARATION.

The instruments having been sterilized, are placed in a creolin or other antiseptic solution, and the operator's hands surgically cleaned.

PREPARING THE PATIENT.

In the normal horse or colt I prefer the standing position. The twitch is applied and the operator approaches the left side of the patient, washes the scrotum, paints it with tincture iodine and wipes it with absorbent cotton.

*Presented at 55th Annual Meeting A. V. M. A., Philadelphia, 1918.

OPERATION.

Standing in the above position the operator grasps the right testicle and opens the scrotum with a free incision. The tunica vaginalis is cut away where it attaches to the testicle with the knife, and the testicle removed with the emasculator close to the testicle, removing nothing but the testicle and its attachments. In my opinion it is bad practice to mutilate and mangle the tunica vaginalis with the emasculator or ecraseur. I do not believe it to be good surgery.

THE MULE.

In all respects the operation on the mule is the same as on the horse—with two exceptions. I prefer to cast the mule and remove all of the tunica vaginalis that covers the testicle. I remove the tunica vaginalis with the knife and the testicle with the emasculator as close to the testicle as possible, leaving the end of the cord, artery and vein hanging below the end of the severed tunica vaginalis, thus making it almost impossible to have a water bag.

THE CRYPTORCHID AND MONORCHID.

The testicles of solipeds are formed in the abdominal cavity and the developed testicle remains in the abdominal cavity maintained there by the gubernaculum testis, which, after birth, draws it into the abdominal ring, where it remains for a brief time (usually from birth to six months after), when the gubernaculum testis becomes a part of the cremaster muscle. In some cases the testicle does not descend, but remains in the abdominal cavity during life or until removed by operation.

THE OPERATION.

In this operation the animal must be cast and secured with his hocks fully flexed and well spread apart. After securing the subject in the proper position on his left side, I prefer he be rolled upon his back and secured in that position.

ON WHICH SIDE TO OPERATE.

If the patient has never been operated on this is easy, but, as is often the case, one testicle has been removed and the other side opened and a search made for the testicle, therefore there is a scar on each side, and it becomes a more or less knotty problem. In many cases this is easily solved by grasping a handful of the skin and deep connective tissue just over the scar with the left

hand and feeling for the end of the spermatic cord with the right hand. When the end of the spermatic cord is detected on one side the testicle must be on the other, and in nearly all cases it can be determined in this way.

THE OPERATION.

The subject, instruments and operator being properly cleansed, make an incision over the external inguinal ring (I am of the opinion that, properly speaking, there is no scrotum), about four and one-half inches long through the skin and dartos. Separate the connective tissue with the fingers from the external to the internal inguinal ring. (I am also of the opinion that there is no inguinal canal.)

An examination of the internal ring will determine whether the testicle or epididymis is in the ring. If the epididymis is on the outside of the ring divide the tunica vaginalis and attempt to remove the testicle by traction on the epididymis, but do not open the internal inguinal ring. When the testicle can not be withdrawn with reasonable traction let go of the epididymis and after lubricating the parts with carbolated oil pass the hand into the incision, using the right hand on the left side and the left hand on the right side. Ignore the internal inguinal ring, so far as getting the testicle through it is concerned.

WHERE TO MAKE THE OPENING INTO THE ABDOMEN.

We can not go to the outside of the internal ring, as there is no room between the ring and the large muscles of the thigh, and it is not practical to go in front of it. We can go to the inside of the internal ring or behind it. If we go to the inside we must make a complicated opening or there will be an escape of intestines, if we go behind the ring we must go behind Poupart's ligament, as it forms the back part of the ring. Where the epididymis is not through the internal ring I prefer to go back of Poupart's ligament, and it is there I make the opening in about 95 per cent of my operations, making the opening upward and forward, so when the animal stands on his feet there will be a curtain hanging over the opening. This will not only help to prevent adhesion, but reduce the chance of prolapsus. I usually enter the abdomen with the first two fingers, but when I deem it necessary I don't hesitate to pass the entire hand. I make the opening with the first finger, on the patient's inspiration. I do not believe the peritoneum perforator to be of any prac-

tical use except to fool and mislead people, if that could be called practical.

FINDING THE TESTICLE.

This is supposed to be the most difficult part of the operation, which is true if the opening is not made in the right place, while if the opening is in the right place it becomes very simple. The hard, cord-like feeling of the spermatic cord, the characteristic feeling of the epididymis, the flaccid, yet firm-like, feeling of the testicle and the location of the gubernaculum testis are sufficient to locate the testicle. When found it is withdrawn with little difficulty and removed with the emasculator or ecraseur. Except when cystic or deformed by adhesion, I use no packing or sutures, but have the animal exercised five to ten miles every day to assist drainage and prevent adhesion.

IMPORTANT POINTS IN SPAYING.

The mare can be spayed in the same way the ridgling horse is castrated, bringing the ovary to the outside in the groin and ligating it in plain view or removing it with the emasculator.

In spaying heifers I prefer to go through the linea alba and remove the ovaries with a curved scissor about ten inches long. In spaying any animal I think it bad surgery to remove any part of the uterus unless it presents a diseased condition. I have attempted to set forth in this paper what are, in my opinion, important points in castration and spaying, on which, I freely admit, there is a difference of opinion among good operators.

DISCUSSION.

DR. ROGERS: I don't know whether my experience will coincide with that of the essayist, but I always put my bitches on what I call my spaying board. When the animal is lying down she is suspended by the hind limbs. I make the incision about the middle of the umbilicus, between the teats, and, while it takes a little longer, I have never in thirty years' practice had any difficulty with protrusions of the intestines.

Another point I have observed in the spaying of bitches that will be of some service to an operator not very familiar with the work is this: As you have the bitch on the board and you are standing here, when you put your finger in the cavity—I never infected bitches with my fingers—you almost invariably find the uterus lying toward you. I don't believe I have ever found it

lying across the median plane, and nine times out of ten as you put your finger in there and hook it up you will almost invariably hook up the uterus.

DR. DUNPHY: I would like to ask for information. Where he made the incision in the female, when he passed his hand up behind Poupart's ligament—whether he made the incision in the region of the udder.

DR. BELL: Yes. I made the incision in the groin back of the udder, down through the connective tissue, separating it with the two fingers, the first finger of each hand, and then pass the hand down back of Poupart's ligament and make an incision the same as in the regular horse.

It may be necessary to enter as much as three fingers or possibly four, but rarely the thumb, to pick up the ovary. You bring it right straight up and ligate it in plain view.

You have got to go on both sides. I operated first on a heifer successfully and turned her loose. She got well without trouble. Some time later I operated on a mare in the same way, and had her exercised and treated and she got well without any trouble.

Understand, I do not claim this to be a more practical method than going through the vagina. I merely mention it as one of the things in operation that can be done. If there is any reason why you want to bring the ovary to the outside and ligate it, ligate it perfectly safe before removing, you can do this perfectly well in this way. You can do the same on the fetus.

I kept a fetus in a jar, and any time I had to castrate a horse I took the fetus and ran my hand down over it so as to refresh my memory as to where to make the incision.

THE BLAND REPORTS UPON EPIZOOTIC ABORTION EXPERIMENTS.

W. L. WILLIAMS.

The Bland reports upon abortion experiments are being so extensively cited in America that it seems desirable to place before the readers of the Journal a summary of them based upon a careful analysis.

The first group of experiments was "carried out in fourteen herds during the period 1911 to 1913." The second report reviews the 1911-1913 data and adds thirteen herds.

The reporter, Mr. G. R. Bland, is Agricultural Organizer for Oxford County, England. Apparently he is not a veterinarian, but seems to hold a position analogous to that of county agricultural agent or adviser in the United States. The experiments of Bland are based upon the researches of Sir John McFadyean, Principal of the Royal Veterinary College at London, and Sir Stewart Stockman, Chief Veterinarian to the Board of Agriculture and Fisheries of Great Britain. The principal publications of McFadyean and Stockman consist of a report and appendix thereto, which appeared in 1909, constituting an official report of a commission appointed by the British Government. Sometimes their report is cited as that of "The British Commission"; sometimes reference is made simply to McFadyean and Stockman. The Bland experiments were carried out in Oxfordshire, in order to test the value of bacterins or killed cultures of *B. abortus* used on pregnant, and living bacteria upon non-pregnant cows, for the control of abortion. The bacterial cultures for the experiments were supplied gratis from Sir Stewart Stockman's laboratories. A number of veterinary practitioners assisted by administering the bacterins and vaccines hypodermically.

The reader must bear in mind that data on abortion in cattle are at best vague and require unusually careful analysis before attempting to reach even a moderately safe conclusion. All investigators know that abortion—the expulsion of the dead fetus from the uterus—is not a safe or even a good criterion by which to measure the degree of loss caused by infections invading the genital tract. Observed abortions occupy a middle ground among the ravages of genital infections. When the infections are very severe and early, conception is thwarted or the embryo is destroyed and absorbed, or expelled when too small to be noted. The infection, acting somewhat more slowly, may cause a visible abortion. Later, however, it may cause a metritis, but premature birth or birth at full term occur. So the abortions observed can only relate to losses occurring in a certain manner and at a certain epoch, and can give only a very poor, and often misleading idea of the health of a herd. Recently I have suggested elsewhere that some definite standard for measuring results in this field should be established, and have proposed that in dealing with the diseases of the genital organs we should take as a standard the average number of months required for the production of a healthy calf, and that our ideal should be one healthy calf per cow for each twelve months. We may then speak in terms of

breeding months, and can take into consideration each pregnancy existing at the beginning or end of the experiment, with the duration of the pregnancy, and thus arrive at an approximate idea of the actual efficiency.

Bland's method of computing the results is not made clear. In the 27 herds covered by the two reports, it is stated that 863 non-pregnant cattle were vaccinated with living abortion bacilli, 112 pregnant cattle with killed bacteria (bacterins), and 712 were kept as controls, making a grand total of 1687 individuals. Bland states that many of the dairymen grow no calves and must frequently purchase cows or heifers of dairy age. No data are submitted to show the average duration of time the animals were under observation, and consequently the most vital fact of all, the rate of production, is not revealed.

The tabulated summary on page 15 of the 1914-1916 report indicates that 600 cows and heifers were inoculated with live abortion bacilli, of which 99 (16.5%) were sterile, 29 (4.8%) aborted, and 472 (78.7%) "calved correctly." While the average duration of experimentation upon the 600 animals is not stated, one may assume, with considerable risk of error, that it was for a period of approximately two years, or for the 600 cows 14,400 breeding months, during which time 472 cows "calved correctly"—one calf was born for each 30.5 breeding months. This is equivalent to 39.3 per cent of the ideal efficiency of one healthy calf each twelve months.

Bland fails to define "calved correctly" and offers no gradation between that and abortion. Somewhere, there must have been premature births and births at full term with retained placenta, but these are apparently merged into "aborted" or "calved correctly" and are hidden from view.

During 1910 the average rate of abortion in the herds of the 1911-1913 experiments is reported as 28.9 per cent. Of the non-pregnant animals inoculated with the live bacilli, 5.7 per cent aborted, 8.3 per cent were sterile, and 86 per cent "calved correctly." Of the pregnant animals given killed bacteria, 15.2 per cent aborted, 10.7 per cent were sterile, and 74.1 per cent "calved correctly."

Bland admits in a footnote that the number of controls barren is not definitely known. Hence the number of controls which "calved correctly" is also uncertain. If the figures submitted are approximately correct, the efficiency in the controls was 3.3 per cent better than in those treated with bacterins. Assuming

that these cows were under observation during two years, there would be in the cows inoculated with living bacilli one calf for each 27.9 breeding months and the breeding efficiency would be 43 per cent of the ideal of one calf each twelve months. By the same standards the pregnant cows treated with bacterins reached 37 per cent and the controls 38.7 per cent of ideal efficiency.

On page 11 of the 1911-1913 report it is claimed that the vaccination with live cultures *reduced* the abortions from 28.9 per cent to 5.7 per cent—23.2 per cent. Among the controls the abortion rate dropped from 28.9 per cent to 18.2 per cent—10.7 per cent. Without any explanation having been offered, it would appear that it would have been more nearly correct to have taken for comparison the abortion rate in the controls, making the equation of 18.2 per cent: 5.7 per cent, instead of 28.9 per cent: 5.7 per cent. In the 1914-1916 report, Bland states: "Briefly, in one season the treatment has cut down the number of cases of abortion from above 30 per cent to about 5 per cent," but he offers no explanation for the dropping of the abortion rate in the controls from over 30 per cent to 19.7 per cent. When the summary is further studied, it is seen that in the 1914-1916 experiments, among the inoculated cows, the abortions—4.8 per cent—with the sterility—16.5 per cent—equaled 21.3 per cent, leaving 78.7 per cent to "calve correctly," while among the controls 19.7 per cent of abortions plus 5 per cent of sterility equaled 24.7 per cent of losses, with 75.3 per cent which "calved correctly"—a difference of 3.4 per cent in favor of the inoculated animals. Taken in conjunction with Bland's statement that bought-in cows were largely used as controls, which regularly behave badly, the data apparently indicated an actual decrease in efficiency.

Similar results are shown by Stockman (Rep. 10th Int. Vet. Cong., p. 352) and quoted by Hadley (Bul. 296, Wis. Ag. Exp. Sta., Sept., 1918, p. 30) in which experiments with living cultures and bacterins are tabulated, showing the following results:

		Sterile, etc.	Aborted.	"Calved Correctly."
Inoculated with live bacilli.....	594	17.0%	5.4%	77.6%
Controls	472	8.5%	21.4%	70.1%
Inoculated with bacterins.....	146	24.6%	15.8%	59.6%

As in the Bland experiments, so in those reported by Stockman, any apparent gain in the abortion rate with living bacilli is virtually counterbalanced by increased sterility, leaving a difference in final calvings of but 7.5 per cent.

A very remarkable showing by both Stockman and Bland is the large number of pregnant cows which "died, were barren, or were sold." It may be quite safely assumed that virtually all of these were "barren," though classed as "pregnant" at the time of inoculation. The much-vaunted abortion bacterins make a lamentable showing—less than 60 per cent of calves.

On page 7 of the 1914-1916 report, Bland states, "The majority of the bought-in cows appear to abort unless they were inoculated when empty. It is probable that the high percentage of abortions among the controls for 1914-1916 is due to the inclusion of these bought-in cows." In the United States, it is a common observation that cows or heifers which have recently been purchased and are moved into strange surroundings abort in much larger proportion than when kept in their usual quarters. On page 10 of the 1911-1913 report, Bland states, "In most of the herds, it was the exception for a cow which had once aborted to be kept and bred from again." As this is a general custom, the dairymen included in the Bland reports would probably buy aborters, which would be kept as controls. Taking these facts into consideration, the difference in the ratio of the 1911-1913 cows which "calved correctly" among those treated with the living cultures—86 per cent—and those left as controls—77.4 per cent—is not as extreme as at first appears. This is still better brought out on page 15 of the 1914-1916 report. It appears that, in the animals which were inoculated with living cultures, 78.7 per cent "calved correctly," compared with 75.3 per cent of the controls, a difference of 3.4 per cent in the two groups. The abortion rate is much lower in the inoculated animals than in the controls, but the sterility rate increases, so that the two counter-balance.

This summary of results raises the very appropriate and serious question of the effect of inoculating a non-pregnant breeding animal with living bacilli which have a selective affinity for the genital tract. Sterility, when due to infection in the genital tract, is, so far as I can see, due to a more virulent infection than is abortion, or it is present at an earlier date, and consequently works to prevent conception. Of course, when observed abortion is taken as the basis of computation, if one injects into a non-pregnant cow bacteria which will prevent conception, he lowers thereby the abortion rate. If it is concluded that the injections of the living bacilli in the Bland experiments lowered the abortion rate, then by the same standards the inoculations raised the

sterility rate and left the reproductive and dairying efficiency of the herd essentially the same. The 1911-1913 report shows that through errors in diagnosis 9 pregnant heifers and 5 pregnant cows were inoculated with living cultures. The abortion rate in the heifers was 11 per cent; in the cows, 40 per cent. The 2 aborting cows had aborted the previous year.

In the 1911-1913 report, the abortion rate following inoculation of non-pregnant heifers with live cultures was 5.7 per cent, sterile 7 per cent, "calved correctly" 78.3 per cent.

When McFadyean and Stockman (Report of the British Commission) inoculated pregnant heifers with live bacilli to cause abortion, 25 per cent aborted; when Bland inoculated pregnant heifers to prevent abortion, 11 per cent aborted, and among Bland's control heifers 13.7 per cent aborted.

Bland's reports show also that animals which have aborted one year are sensitized, not immunized, and are more liable to abort the following year than those which calved the preceding year. In the two reports, 183 cows which had aborted the preceding year and were inoculated aborted at the rate of 7.1 per cent, 24 per cent were sterile, and 68.9 per cent calved. Among 30 controls, 30 per cent were sterile, 30 per cent aborted and 40 per cent calved.

Of the 14 herds recorded in the 1911-1913 report, 7 herds, representing 29.5 per cent of the total animals, had discontinued the treatment in 1913. Of the 13 herds placed under experimentation in 1914-1916, 6 herds, comprising 78.9 per cent of the total number of animals had withdrawn. The reasons for discontinuing are not stated. So far as I have been able to find, neither McFadyean, Stockman nor Bland recommends the use of bacterins or vaccines except as an interesting experiment. No British maker of biologic products, so far as a search among advertisements in English journals reveals, offers bacterins, vaccines or other "cures" for "abortion."

SALICYLIC ACID AS A REMEDY FOR CHRONIC HOG CHOLERA.

DANIEL J. HEALY.

(Kentucky Agricultural Experiment Station, Lexington, Kentucky.)

That hog cholera has been continuously present in the United States for more than fifty years¹ is, in all probability, mainly due to the presence of the disease in a chronic form during the inter-

vals between epidemics of acute cholera. It is estimated that the average animal loss from hog cholera in the United States during the past forty years amounts to \$30,000,000,² and competent observers estimate the loss from chronic cholera at from 2 to 20 per cent of this total. The plan of slaughtering infected herds, together with strict quarantine and disinfection of premises, is entirely unsuitable in this country.³

The diminished supply of pork and its high price, the increased cost of feed and the scarcity of labor, the fact that our Food Administration is negotiating with our Allies for the purpose of supplementing with pork the beef supplied to their armies, should stimulate the swine producer to remove, in so far as possible, every factor which limits his pork production.

That acute hog cholera may be an important factor limiting pork production has been thoroughly demonstrated. That anti-hog-cholera serum is the best preventive known at the present time for acute cholera also has been thoroughly demonstrated. Chronic hog cholera is a factor limiting pork production, and anti-hog-cholera serum is of no value as a remedy for the chronic form of the disease. In fact, Hoskins advises against the use of the serum in a herd where the disease has assumed the chronic form.⁴ It is generally conceded that hogs which do not fully recover from cholera should be destroyed, as they remain a constant menace to newly purchased and to young animals.

Chronic hog cholera resembles, in a general way, the acute form of the disease, yet all the symptoms are much milder and the sick hogs live much longer than do those hogs acutely sick. In the chronic form of the disease the temperature is misleading, the appetite may remain normal for several days and then disappear altogether; as a rule, there is diarrhoea and marked emaciation, the animal finally dying after several weeks or months. The only postmortem lesions which are characteristic of chronic cholera are ulcers of the mucous membrane of the stomach and intestines. Many hogs recover from chronic cholera, remaining stunted in growth, unprofitable, and a source of constant danger to other hogs.

It is therefore evident that a remedy for chronic hog cholera would have a distinct value.

In 1881, E. C. Kerrison published an interesting article on salicylic acid as a remedy for foot-and-mouth disease,⁵ to which the author's attention was called by Mr. O. M. Shedd, of this station. Salicylic acid is rather remarkable in that it is anti-

septic without being distinctly toxic. It has a powerful inhibitory action upon unorganized ferments. It is unstable in the body, yet when taken internally passes rapidly as sodium salicylate into the peripheral blood, and is as rapidly excreted by the kidneys. Synthetic salicylic acid may act as a cardiac depressant, due to the presence of ortho-, para- and meta-cresotic acids as impurities. Its action in acute rheumatic fever is almost specific, yet in gonorrheal rheumatism it is of no value whatever. In our own work we have found it remarkably effective in chronic hog cholera, yet with no value whatever in the acute form of the disease. The causative agents of hog cholera and foot-and-mouth disease being both filterable, suggested the possibility of the value of salicylic acid in hog cholera.

In December, 1914, Dr. Robert Graham, who was then in charge of our anti-hog-cholera serum laboratory, selected for the author ten shoats which were suffering with chronic cholera. These shoats would average about fifty pounds each. Dr. Graham was convinced that the shoats were of no value and should be destroyed. The shoats were placed together in a pen. Twenty grams of salicylic acid were dissolved in three liters of hot water and this solution, diluted with three liters of cold water, was placed in the feeding trough. The shoats drank this solution freely and with relish. Eighty grams of salicylic acid were suspended in twelve liters of warm water and two and a half liters of this suspension, diluted with an equal volume of cold water, were given to the shoats twice daily for five days. Treatment was then discontinued for two days. At the end of this period four of the shoats with continued high temperature were again given salicylic acid for six days; the remaining six shoats were turned out on young rye. The weather turned very cold, the temperature falling to 7°F. on the fourth night. On the fifth morning one of the six shoats, A.1430, was found dead. Post-mortem examination showed double lobar pneumonia with no evidence of cholera. The remaining five shoats developed nicely and were sold one month from beginning of treatment.

Of the four shoats receiving the second treatment with salicylic acid three were normal four days after the second treatment was discontinued and were turned out on young rye. They developed nicely and were sold with the above five shoats. The fourth shoat, A.1416, did not respond to the salicylic acid treatment and died on the seventh day. Postmortem examination showed spleen, liver, kidneys, intestines and ileo-cecal valve

normal. Innumerable abscesses of anterior mediastinal glands. Purulent pleurisy of right side, the pleural cavity containing a quantity of pus. Purulent pneumonia of both lungs, which were riddled with abscesses. Smears made from the lungs did not show mycobacterium tuberculosis. Cause of death, purulent pneumonia.

The following is the temperature record of the ten shoats:

<i>Day of Treatment</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	F		3		1	3	*										
A. 1424 ...	102	103	102	102	102	100											
	2	1	3	1	4		*										
A. 1429 ...	103	104	102	102	103	103											
	1	1	3			4	*										
A. 1431 ...	103	103	102	103	103	102											
			4	1	3	3	*										
A. 1530 ...	103	104	103	103	101	102											
	4		1	2	4	4	*										
A. 1586 ...	104	102	102	102	103	101											
	2		4	1	4		1		2	2	*						
A. 1417 ...	106	102	101	102	104	103	104	104	102	102							
	1	3	3		3			4	1	2			*				
A. 1513 ...	102	104	105	105	105	107	106	105	104	102		102		*			
	1	2	3		1			1	1				*				
A. 1523 ...	103	103	103	102	104	103	103	102	102								
		2	3	4	2	1					†						
A. 1430 ...	101	103	103	103	102	102											
	3	4		4	1	2	3	4	4	3	3	3	3	3	3	3	†
A. 1416 ...	103	103	103	102	105	104	103	103	104	104	104	104	103	103	103	104	

*Turned out on rye.

†Died.

Eight shoats made complete recoveries and two died, one of double lobar pneumonia and one of purulent pneumonia.

Dr. Graham again selected for the author seven hogs which were suffering with chronic cholera. These hogs averaged about one hundred and sixty pounds each and Dr. Graham was convinced that they were of no value and should be destroyed. These hogs were placed together in a pen. Eighty grams of salicylic acid were suspended in twelve liters of warm water and two and a half liters of this suspension, diluted with an equal volume of cold water, were given to the hogs twice daily for five days. Two days after discontinuing treatment six of these hogs, evidently well, were turned over to Dr. Graham, who later used them as serum producers.

One hog, A. 1577, was so sick on beginning treatment that it refused the salicylic acid solution and died on the third day. The following is the temperature record of the seven hogs:

<i>Day of Treatment</i>	1	2	3	4	5	6
A. 917	2 104	1 103	3 102	1 102	1 102	2 103
A. 1999	1 103	2 105	3 102	2 101	2 101	2 102
A. 1587	4 103	3 102	2 101	2 101	1 100	1 103
A. 1978	4 103	3 103	2 101	2 102	1 102	3 101
A. 877	1 102	3 102	3 101	2 101	2 101	3 103
A. 6900	3 104	1 104	2 101	2 101	2 100	2 102
A. 1577	3 104	3 105	3 *			

Six hogs made complete recoveries and one, receiving no treatment, died.

To test the value of salicylic acid in acute hog cholera, three shoats were selected and given, by hypodermic injection, 2 cc each of cholera virus. Beginning four days later, salicylic acid solution was given twice daily until they were too sick to drink. These shoats all died within ten days, and postmortem examinations showed acute cholera in each case.

Again, four shoats weighing about seventy-five pounds each were selected and 2 cc of cholera virus given to each by hypodermic injection. Beginning five days later, salicylic acid solution was given twice daily until they were too sick to drink. These shoats died within twelve days, and postmortem examinations showed acute cholera.

Again, twelve shoats weighing from sixty to eighty-five pounds each were selected and 2 cc of cholera virus given by hypodermic injection to each. Beginning the following day, salicylic acid solution was given twice daily for five days. Eight of these shoats died within twelve days and postmortem examinations showed acute cholera. Twelve days after the administration of virus four of these hogs looked fairly well and were again given salicylic acid solution twice daily for ten days. These four shoats made complete recoveries. They were evidently developing chronic cholera and the second treatment with salicylic acid proved successful. The following is the temperature record of these four shoats:

<i>Day of Sickness</i>	10	11	12	13	14	15	16	17	18	19
A. 6036	4 105	7 105	2 102	2 102	4 102	3 102	4 103	5 103	1 102	3 102
A. 6041	3 104	5 104	6 103	4 102	1 103	2 103	4 103	2 102	4 103	2 103
A. 6051	2 104	6 104	4 103	1 102	2 101	4 102	5 102	6 102	4 102	4 102
A. 6058	3 104	2 105	2 102	1 103	2 103	2 102	3 102	5 102	4 103	2 103

Note—The second salicylic acid treatment from the 12th to the 22nd days.

SUMMARY.

Hog A. 1577, of the second experiment, may be eliminated, as it received no salicylic acid. This leaves twenty hogs with chronic cholera receiving salicylic acid. Eighteen, or 90 per cent, of them, recovered and developed nicely. On the other hand, fifteen hogs with acute cholera, receiving salicylic acid, all died.

It therefore appears that the author found salicylic acid a distinctly effective remedy in chronic hog cholera, although of no value whatever in the acute form of the disease.

REFERENCES.

- ¹ Farmers' Bulletin No. 834, August, 1917.
 - ² Ibid.
 - ³ U. S. Dep't Agric. Bul. No. 584, October, 1917.
 - ⁴ Hog cholera and the use of serum, H. Preston Hoskins, Agric. Extension Division, Univ. of Minn. Spec. Bul. No. 2, July, 1915.
 - ⁵ Remedy for Foot and Mouth Disease, Sir E. C. Kerrison, Jour. Roy. Agric. Soc., Vol. xvii, Second Series, London, 1881, p. 89.
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THE CAMOUFLAGED COW.

About the best story of the art of camouflage I have seen, and one that will appeal more directly to the readers of the Journal, is given in one of Glasgow's papers. Here it is:

So as not to ruffle the censor I have withheld for over two years this true story of the Western Front told me by an R. E. officer. In the earlier days of trench warfare a cow was killed in No Man's Land. For several days it lay between the British and German lines. Then our engineers had a brilliant thought. With steel sheets, other materials, and a judicious use of paint they constructed an object to resemble the dead cow and under cover of night substituted it for the rotting carcass. A tunnel and telephone were then quietly run out to the steel cow, which could hold a man comfortably inside; by using the eyes as spy-holes our men were supplied with a valuable observation post that enabled them to spot in safety and with accuracy the movements of the enemy at that part of the line. As showing how thoroughly the work of camouflage was done the outside of the imitation animal was each night smeared with a syrupy substance, thus attracting all day a dense crowd of flies, to the complete hoodwinking of the unsuspecting enemy.—Meat Trades Journal.

CLINICAL AND CASE REPORTS.

PARASITIC DISEASES.

S. HADWEN.

In the February number of the "Veterinary Journal" there appears an article by Captain E. M. Jarvis on "Exotic Lymphangitis," which he defines as an inoculable disease through the agency of *Amblyommid* ticks.

"The disease is characterized by suppuration, ulceration and necrosis."

Captain Jarvis believes that the lesions are caused by a variety of microorganisms, including "the Priesz-Nocard, the *Cryptococcus farciminosus*, the bacillus *Necrophagus* and *Staphylococci*," and that these organisms are introduced through the agency of the mouth parts of the ticks.

He is especially suspicious of those belonging to the genus *Amblyomma*, and he thinks that, as these ticks have very long mouth parts, they pierce the whole integument, and reach subcutaneous layers, where the bacteria can easily set up the lesions which he has described.

This short review of Captain Jarvis' work helps to illustrate what I am about to say concerning some troubles we have on the western slopes of the Rocky Mountains in Canada.

For a number of years past we have had outbreaks of fistulous withers and poll evil among unbroken range horses.

These outbreaks frequently appeared early in the season, and we have been at a loss hitherto to explain the predisposing causes.

There are, of course, a number of ways, known to all of us, in which these troubles begin, such as through blows and bruises; and the horse owners have had an idea that stallions were responsible for some of the trouble, since they frequently bite animals in the region of the withers. It is, however, impossible to explain in such ways the large number of cases that arise.

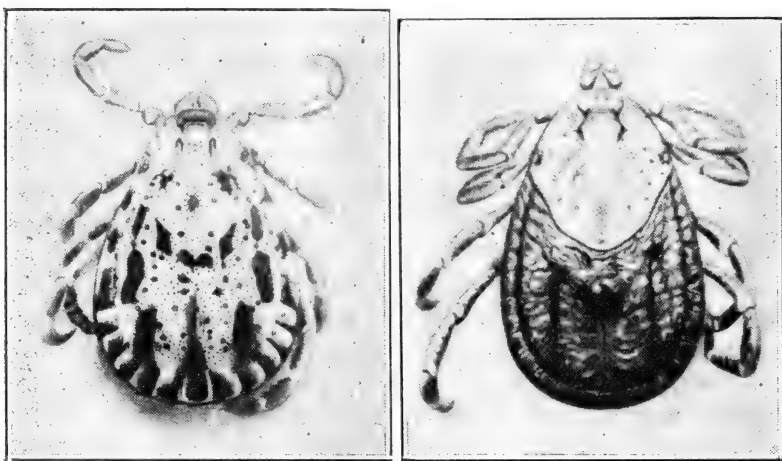
Since I have read Captain Jarvis' article I am convinced that ticks play an important role in producing fistulous withers. The following facts will bear out my contention:

Note: Part of address delivered at Philadelphia meeting of the American Veterinary Medical Association.

Dermacentor albipictus would appear to be the worst offender, and possibly also *D. venustus*. *D. albipictus* is commonly called the "Winter" tick; and in some regions of British Columbia, especially where poll evil and fistulous withers are common, horses are heavily infested with these ticks.

The favorite seat for attachment is along the whole length of the mane, from the poll to the withers. If an animal is examined when a heavy infestation is present, it will be noted that at each point of attachment there is a necrotic spot if the tick has been attached for a few days.

The necrosing action following the bites of *D. albipictus* on horses may be as great as the after-effects of the bites of *D. venustus*, which have been well studied in other animals. It is easy to see that these necrotic spots should be a favorable point of entrance for bacteria.



Dermacentor venustus (male)

Dermacentor venustus (female)

In connection with the bites of *D. venustus*, it is noticeable that some time after the tick has attached, the animal feels a considerable amount of irritation, which is manifested by biting, scratching or rubbing. This, no doubt, further aids the introduction of bacteria. This pruritus persists for very long periods, and in man lasts for some months. A very good description of the necrosing and other effects following the bites of *D. venustus* is given in the *Journal of Parasitology*, by McCaffrey (1916).

The accompanying photograph shows a child with a tick bite on the neck. The parents informed me that this child had been scratching the bite for over a year.

It is a well-known fact that ticks inject an anti-coagulin when they attach, and that they also produce a necrosing action to the surrounding tissues. Future experiments will decide just what occurs.

In summing up, it would appear that, owing to the habit which Dermacentors have of attaching in the region of the mane of horses, it is probable that that may be the cause of producing more damage than we have hitherto suspected.

PREVENTIVE MEASURES.

Seeing that Dermacentors attach by preference to the base of the mane, it would be, I should think, a comparatively easy parasite to treat for. The principal thing to avoid would be the



Tick Bite on Neck of Child

application of substances liable to injure the skin. In reading Steele's book on the diseases of sheep, I find the following dressings, which used to be applied years ago to sheep in Scotland. Shepherds have informed me that these dressings were applied for a double purpose: one, to destroy any parasites which happened to be on the skin, and the other purpose being to increase the shedding power of the wool against rain. The dressings must have been of a mild and non-irritant nature, as I am informed

that the skin of the animals was completely saturated with them. As these dressings contain much oil, they should be quite lasting, and be both repellant and fatal to ticks when applied.

Butter and lard, each, 18 pounds.
Resin, 12 pounds.
Gallipoli oil, 1 gallon.

Or the following may be used:

Train or seal oil, 4 gallons.
Tar, $\frac{1}{2}$ gallon.
Oil of turpentine, 1 pound.*
Mix and rub in well after shearing.

AN INTERESTING CASE, PROBABLY OF MILK FEVER COMPLICATIONS.

I was called upon recently to examine a valuable cow; she had calved the night before, and the next morning the calf was behind her, although she was left as usual before the owner retired to rest. On the next morning she was lying and rising in great agony and moaning very heavily. The local empiric was sent for, and he, with his usual quickness, diagnosed pneumonia. He applied mustard all over the body, and on his further examination, found a very sore foot also; he washed out same with Jeyes' fluid and hot water, and said she would now soon be well. She continued in the same condition until evening, getting no better, and apparently sicker and suffering great pain, moaning and restless. A neighbor of the owner called to see the valuable cow, as he heard she was not well, and on seeing her, expressed the opinion she was very ill, and that "the quack was all right for simple things, but it was better to have a qualified man's opinion, as she was a great cow." I was sent for, and on arriving at the byre found animal standing, and moaning very heavily. Temperature was about 102 degrees, pulse was thready, respirations labored; she had a serious discharge from the vulva, and as I have already said, she was found in this position when we arrived in the morning. I washed my arm with an antiseptic, examined her uterus, found, in my opinion, everything normal. In case of infection being present, I passed into uterus a pessary

of iodoform and boric acid. She still continued to moan and breathe heavily, then lay down, and after she lay for about fifteen minutes I attempted to raise her. She appeared to rise with difficulty, and staggered somewhat. I then thought of milk fever complications. I gave her the oxygen treatment, per udder, and treated her as a case of milk fever. I left, and said I would return in three or four hours afterwards. On my return I was informed she lay down, and apparently slept, and on several occasions she arose very quickly and continued her moaning, and when she lay she was particularly ill, and moaning. I then loosened her teats and bathed her udder with an antiseptic wash. I then directed her to get a drink, and with a smile they said: "We have been coaxing her all day to take a drink, and she refused." However, I said: "Try her once more," and to the great surprise of all, she took it, and shortly afterwards started to chew her cud, and when I left she was still ruminating. The byre was full of neighbors, among them the empiric himself, and I think his great name had got a hard blow, and on expression of his opinion to do this and that, the courtesy shown him was not the usual. I saw her next morning, and she was as usual, and has continued so ever since. The owner, who was a great supporter of this empiric, said it was a straight win for the professional man, and gave a severe knock to ignorance and quackery.—J. McBirney, M. R. C. V. S., Rathfriland, in the Veterinary News.

NOTE ON THE OCCURRENCE OF *FILARIA PAPILLOSA*.

The following note may be of interest to some of our readers, although the specimen was secured some time ago by the writer from the aqueous humor of a horse's eye. About nine days prior to its extraction it was observed by the owner of the animal to be about one-sixteenth of an inch in length. At the time of operation, however, it appeared to be fully developed, being in the neighborhood of 50 mm long, and was probably a male parasite.

The following are a few brief observations relative to what is known of *Filaria papillosa*, and its connection with "verminous ophthalmia." The members of the order, "Nematoda," to which this parasite belongs, are quite numerous, being found in all the organs of the domestic animals, with the exception of the bones and the nervous system.

Abildgaard gave to his parasite the name *Filaria equina*, while *Filaria palillosa* was the one given to it by Rudolphi. Its description, according to Neumann, is as follows:

Body long, filiform, white, attenuated at both ends, and especially behind. Mouth small and provided with a chitinous infundibuliform ring, the border of which is divided into four rounded and salient papillae; outside this ring are four sub-median papillae, in the form of spinules. Male, 6 cm to 8 cm long; tail curved in a spiral manner, and having eight papillae on each side, of which there are four pre-anal, and four post-anal; two unequal spiculae in a transparent sheath. Female 9 cm to 15 cm long; tail, slightly spiral, and terminated in a papilla preceded by two others. Vulva situated near the anterior extremity. Oviviparous.

It appears that the presence of a worm in the interior of the eye of a horse was reported for the first time, in 1622, by Spigel. In 1773, a century and a half later, Domingo Rayo, a Spanish veterinarian, mentions a similar occurrence in a mule and a horse. In 1762, there was exhibited in Philadelphia a horse that had, so it was reported, "a living serpent in its eye." A similar observation was made by Sick at Vienna in 1804. Since that date, the condition, "Intra-ocular helminthiasis," has been observed on several occasions, both in this country and in Europe; although the late Prof. William Williams, of Edinburgh, Scotland, has stated that it is unknown in Great Britain. It would appear, so far as we can ascertain, that these *filariae* are most common in Bengal, Upper India, Madras, Ceylon, etc., and up to the borders of Burmah. They seem to be more frequent in certain localities than in others, and are observed mostly during the cold season, and when rain has been abundant. Kennedy was the first to make mention of the condition in the eyes in horses in India, and more recently, details have been furnished by other observers, including Percival, who, in 1825, stated that "in low, humid situations in India, where fogs are prevalent, and where there is stagnant water, especially after an unusually wet season, 'worm in the eye' is a very common occurrence. It is also seen in other parts during the cold months, from the beginning of October to the latter end of February. The symptoms seem to be conjunctivitis, the cornea obscured by 'nebulous effusion,' the eyelids closed, and photophobia. On close inspection, a small white worm can be discerned floating in the aqueous humor, at one time rising to the superior, at another, sinking to the bottom part, of the chamber." (The symptoms observed in the writer's case were the presence of the threadlike nematode actively swimming about in the aqueous humor, and opalescence of the cornea, only.)

Paszotta has observed that the eye-filaria may die and become absorbed in five or six weeks.

Although ophthalmia due to *filariae* in the interior of the eye has been observed most frequently in equines and bovines, some exceptional instances have been recorded as occurring in the sheep, dog, chicken, and goose.

It is claimed by some authorities that the *Filaria papillosa* usually lives in the peritoneum of the horse; but Rudolphi has also found this parasite in the sub-peritoneal and inter-muscular connective tissue of the abdominal walls. Other observers have discovered it in the sub-arachnoideal space, in the substance of the diaphragm, as well as some other tissues of the body. In stagnant waters in India, both the parasites and their ova are said to be abundantly found, and that they find their way into the animals' bodies along with the drinking water, either in the fully developed state, or as ova.

As *Filaria papillosa* seems to have been discovered in such a variety of habitats, when found in the eye it may be looked upon as an "erratic" parasite; that is, found in the adult stage in an organ different from that which constitutes its usual haunt.

The course by which the *filariae* of the horse find their way to their final location seems not to be definitely known. It may be presumed, however, that the blood-stream would be a most likely vehicle, especially for the conveyance of the ova to distant parts, they being, necessarily, extremely minute in size; and development completed in the ultimate location—the anterior chamber of the eye.

While similar occurrences may have been observed in different parts of the country, the writer thinks they must have been somewhat rare, as, during a period of thirty years in the South, the case alluded to is the only one seen by him in that time.

W. H. D.

GANGRENOUS DERMATITIS.

From the return it will be observed that a total of 68 donkeys treated were exhibiting a condition which I have termed Gangrenous Dermatitis.

This condition has proved very refractory to cure, and has caused considerable inconvenience to the units concerned. More especially has this been the case with the donkeys of the animal transport, L. of C., where at one time 30 per cent of their total strength were under treatment and incapacitated from duty.

The disease, as it almost invariably presents itself, is localized to the skin and underlying tissue in the region of the heel and coronary band, but from the original site, if not treated early and energetically, spreads rapidly in all directions and invades the deeply-lying structures, tendons, ligaments, and even bones.

Unfortunately in most cases, more especially in donkeys, where the difficulties of detecting the lesion in its initial stages are great, the disease may be in existence for a day or two, and there is marked lameness when the animals are brought in for treatment.

The local lesion is a necrotic gangrenous wound of variable size, met with usually in the region of the heel; there is a very persistent foul-smelling purulent discharge of a greyish color, in which may be found small particles of dead tissue.

The edges of the wound are rugged, not well defined, and of a necrotic character.

The gangrenous necrosis spreads with alarming rapidity, and within 24 hours of first being noticed the wound may have doubled its circumference and burrowed so deeply that certain important underlying structures have become involved, such as tendon and tendon-sheaths, with a corresponding increase of pain and a corresponding decrease in the prospects of an ultimate recovery.

In fact, when once the necrotic process has invaded the tendon-sheaths or other underlying structures, destruction is the only course indicated.

Treatment.—The necrosis and gangrene must be arrested and the adjacent and still healthy tissue encouraged to throw off the attached gangrenous slough.

For this purpose I have found the application of pure turpentine to the wound and the removal of all loose tissue to have a most marked effect.

The turpentine is not only a strong penetrating antiseptic, but has a decidedly stimulating action on the adjacent healthy tissue, causing a well-marked leucocytosis and, in favorable cases, within 48 hours, sloughing of the dead tissue, leaving a healthy granulating surface underneath.

As soon as the slough has separated and granulations well advanced, there is no danger of a further extension of the necrosis, and the healing process goes on uninterruptedly.

In conjunction with the above I use the following liniment soaked in cotton wool and bandaged to the part:

Ol. Tereb.....	} applied twice daily.
Zinc Oxid.....	
Boric Acid a a.....oz. ii	
Tar or Disinfect. Fluid...oz. i	
Ol. Lini. ad.....oz. xxiv	

This application has the effect of encouraging healthy granulations and rapid recovery.

The mortality from this condition has been rather high in donkeys, firstly, from the usually advanced state of the necrosis before treatment is commenced, and, secondly, owing to the donkey propensity for licking and eating wounds great difficulty is experienced in keeping the parts bandaged and the wounds free from flies.

This treatment has given quite satisfactory results, and certainly is superior to other forms I have tried in the past.—Capt. W. W. Henderson, Veterinary Officer, Port Amelia, in Veterinary Journal.

ABSTRACTS.

THE CERUMINOUS GLANDS OF THE PIG AND CAT.

A. Mensa, having studied the ceruminous glands of the auditory passages in the pig and cat, communicated his results to the *Archivio Scientifico di Medicina Veterinaria* in 1914. The ceruminous glands are of two kinds, viz.: (1) the tubular, which are analagous to the sudoriparous glands of the common integument, but adapted to the production of different material, and (2) the clustered glands, analagous to the cutaneous sebaceous glands, and with the same histological constitution. The numerical relation of the two varieties of glands varies according to the species of animal.

The tubular glands are absent in some of the mammalia; but both varieties are encountered in the cat and the pig. In the cat they are in almost equal proportions, except as regards the size of elements. In the pig there is an evident numerical disproportion, the sebaceous glands being distinctly the more numerous.

For this reason, a uniformity of relations is observed in the cat which does not exist in the pig. The author finds that the glands in the cat are in corresponding series, the sebaceous glands

being superposed to the tubular ones; one group of tubular glands corresponds to every group of sebaceous glands, and their relations of contiguity do not vary throughout. In a few instances there are exceptions to this rule, from absence or a lesser number of the tubular glands.

The sebaceous glands are always very well developed in the cat. The disposition of these glands corresponds to that of the analagous cutaneous glands. The tubular glands are of great extent and very ample. Their excretory canals, according to Lunghetti, constantly open into the hair follicles. Mensa, however, believes that in the majority of instances they open on the cutaneous surface, and less frequently in the hair follicles.

The characters described as pertaining to the ceruminous glands in the cat are also of general application to the glands in the pig; but there are some exceptions. In summarizing these, Mensa says that the glands in the pig are very inferior to those of the cat in the number and in the extension of the glandular groups; nor are the glandular elements so well developed. The tubular glands in the pig are of less ample lumen and are less deeply situated than in the cat, in which animal they occupy the hypodermic connective zone bordering upon the perichondrium. In the pig, the presence of an adipose zone behind the tubular glands is noticed. In the pig, even more frequently than in the cat, the tubular glands open freely on the cutaneous surface.

The very debateable question of the genesis of the cerumen is connected with the existence of these two varieties of glands in the auditory passage. Mensa thinks that the sebaceous glands discharge the protective function of the passage and of the tympanic membrane, while the other glands only produce the yellow-grey pigment which imparts the color to the cerumen, and also a liquid secretion which keeps the area of the external passage humid.—(*Revista de Higiene y Sanidad Pecuarias.*)—*Veterinary Record.*

HORSE DEMOBILIZATION.

It is well known that the Germans for years before the war were buying thousands of horses a year from England and Ireland. At one time a representative of the German Government was specially engaged to visit English race meetings, where he was a constant bidder for, and frequent purchaser of, winners of selling races. He did not stop at actual winners, but was pre-

pared to buy other horses. The one stipulation in buying for the German Government was that the horses should be sound in wind and limb. In addition to this special buying of the German Government there were numerous other agents picking up likely animals for the Fatherland.

But with all this preparation we were able to beat the German even so far as the employment of horses was concerned. The work of horses in warfare does not start and end with the cavalry forces. The real value of the horse lies in transport and artillery work. Motor power has not supplanted horse power. The full value of motor power depends upon the provision of good roads. But with modern guns, in modern warfare, you cannot depend upon good roads, and here it was that the horses came in.

The value of the services of horse power in the war is acknowledged by Sir Douglas Haig as follows: "If in March, 1918, the equine force of Germany had been on the same scale, and as efficient, as the British equine force, the Germans would unquestionably have succeeded in breaking through between the French and the British armies, and inflicted a defeat so great that recovery might have been impossible."

Now those horses that have done such good work are to be sold. Fifty thousand have been handed over to the Belgian Government and no doubt the devastated districts of France will take at least a similar number. But between now and the end of January 25,000 are to be offered by auction in various parts of England.—*People*.

SERUM OF LECLAINCHE AND VALLÉE.

Leclainche and Vallée, in *La Presse Medicale* of April 2, 1917, published a new communication upon the methods of using their polyvalent serum. Their account is based upon the very numerous applications of the serum which have been made in the course of the war; and they state that it may be employed by local applications upon infected surfaces and by subcutaneous injections when post-traumatic infections are present. The two methods of application are dealt with separately.

Local applications. The use of the serum excludes that of antiseptics, which, in addition to the coagulating and neutralizing actions which some of them exercise, almost always have the

disadvantage of depressing and paralyzing the organic cells. This latter action is essentially antagonistic to that which the serum is desired to effect.

The serum must be brought into contact with the anatomical elements; and therefore it is necessary to free the wound from the various elements which cover it by a minute washing with boiled water.

The testimonies of medical men who have employed the serum on the prescribed lines are completely favorable. P. and L. Bazy write, "In wounds which cannot be completely united by sutures, we apply the polyvalent serum freely, obtaining excellent results. The healing processes are not painful, the flesh is well preserved, the lips of the wound remain admirably flexible, and very rapid granulation commences at its base." On the other hand, Prof. Quénu, summarizing the results of various surgeons, decides that "the polyvalent serum causes a considerable diminution of supuration." At the same time a greater activity in the epidermization of the edges of the wound, a lessened sensitiveness, and an improvement of the general condition with descent of the temperature, are observed. These conclusions are applicable both to war wounds and those which result from the opening of phlegmons, anthrax lesions, etc.

It is recognized, however, that "discrimination is necessary in the treatment of septic wounds, and that it is sometimes desirable not to perpetuate the same formula of treatment." It is known today, for instance, that the *Bacillus pyocyaneus*, which is often resistant to the polyvalent serum, yields marvellously to a weak solution of nitrate of silver.

Cazin and Mdle. Krongold say, "When the beneficial action of the polyvalent serum, locally applied, does not manifest itself rapidly and evidently, it is useless to continue this treatment." In these circumstances the microbial flora of the wound include at least one microbe that is not comprised among the numerous forms used for obtaining the serum. It follows from this that the polyvalence of the serum is always being improved by the introduction of microbial types isolated from war wounds.

Subcutaneous injection. In the hands of Prof. Lagneau, Cazin, Vautrin, Gosset, Berger and Bergeron, and Prof. Delbet and Prof. Quénu, who have studied its employment, the polyvalent serum has shown itself a very valuable agent against infections and toxic complications of large wounds. Cazin concludes from his experience that in particularly serious cases in which he has had

recourse to the serum the results have been very favorable, for he has observed a progressive and sufficiently rapid descent of the temperature with an improvement in the general condition. And Quénu adds, "It is impossible to deny that sero-therapy has contributed much to the treatment of gravely affected septicæmic patients." It appears to be as an anti-streptococcic agent that the serum acts in circumstances.

The hypodermic use of the serum (either alone or in conjunction with local treatment by means of the serum or some other agent) is also very valuable in the prevention of operative complications following operations in infected ground.

Prof. Delbet uses the serum in doses of 30 cc daily in polymicrobial infections. He says that in certain cases high doses appear to him to have a notable action, and his impression is that they have saved the lives of some patients.

Hypodermic injections of this serum entail no danger of septic or anaphylactic accidents. The conclusions of the Academy of Medicine, etc., are completely assuring on this point.

Leclainche and Vallée manufacture their serum at the laboratories of the Alfort Veterinary School, and hitherto it has been used solely for the necessities of the war. It is well, however, to follow its present evolution; for in time of peace it will be of great utility, and will then be available to all the world.—*Revista de Higiene y Sanidad Pecuarias*.

CORRECTION.

In the Extra Edition, January 15, 1919, under the list of Presidents, page 485, President V. A. Moore's address was inadvertently given as "New York, N. Y.," instead of New York, only, as referring to the State. •

Also, on page 420, reference to the address of welcome should have been the November Journal; and to the response, the October Journal, instead of the reverse, as printed in the Extra Edition.

ARMY VETERINARY SERVICE.

Dr. T. B. Harries writes from Wessex Divisional Veterinary Hospital, Romsey, Hants, England, that he is now stationed there with a divisional unit. This is his first experience with a hospital, as he has been with the artillery in the British Salonica force operating in Macedonia until the armistice of Bulgaria was signed. Captain Harries hopes to be sent to France, but he thinks his chance of serving on the western front are very slight. Captain Harries was with the party of veterinarians that went to Europe to attend the International Veterinary Congress in London in 1914. At the outbreak of war he stayed in England and joined the British veterinary force and has been in active service ever since. Captain Harries' home is in Calgary, Canada.

Dr. R. E. Ouderkirk received an honorable discharge as second lieutenant in the Veterinary Corps in December and has returned to his practice at Reynolds, Ill.

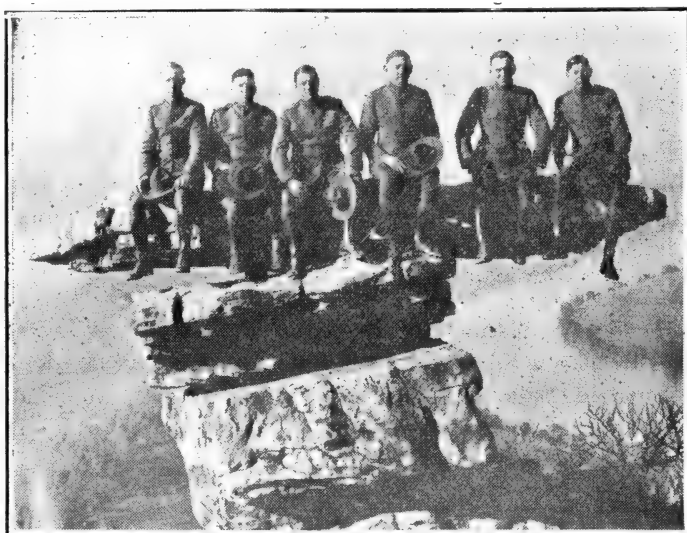
Lieutenant Colonel D. S. White, V. C., has been promoted to the rank of full colonel.

Second Lieutenant Hursh R. Yost was promoted to a first lieutenancy in October. He is a transport veterinarian, with headquarters at Newport News, Va., and has just returned after having taken a load of horses and mules to France. The necessity for good animals in France may cause a continuance of such transportation.

Dr. George E. Golden, second lieutenant, Company 47, Battalion 12, Camp Greenleaf, Chickamauga Park, Georgia, writes the Journal in a very optimistic strain with reference to his life in military training camp, and remarks he never felt better in his life.

The Doctor gives us an idea as follows, what a day's work consists of, which should keep any man in perfect condition, morally, mentally and physically, and submits a photograph showing a few hours of recreation:

Saturday	A.M.	Bugle blows (get up).
5:30 A.M.		Roll call.
6:10 A.M.		Calisthenics.
6:15 to 6:45 A.M.		Police duty (cleaning streets, making beds, etc.).
6:30 to 7:30 A.M.		Sanitary company drill.
8:00 to 9:00 A.M.		Lectures (army regulations and veterinary subjects).
9:00 to 11:00 A.M.		Battalion drill.
11:00 to 12:00 M.		Dinner.
12:00 to 12:45 P.M.		Police duty (clean company street).
12:45 to 1:00 P.M.		Cavalry drill.
1:00 to 3:30 P.M.		Detachment drill.
4:00 to 5:20 P.M.		Supper.
5:30 to 6:10 P.M.		Study period.
6:30 to 8:30 P.M.		Our own time until bugle blows, then lights out.
8:30 to 9:30 P.M.		Examination.



The above picture was taken November 3, 1918, on Umbrella Rock, point of Lookout Mountain, Chattanooga, Tenn.

Reading from left to right—Second Lieutenants McCoy, Miller, Golden, Pottle, Matter and Brown.

A subsequent note from the Doctor states that he has been honorably discharged from military service and will resume his duties immediately with the Bureau of Animal Industry, Des Moines, Iowa.

The very efficient service performed by the British Army Veterinary Corps during the war has been recognized by the king of England, who, by royal warrant, issued November 27, expressed his great satisfaction with the work of the corps during the war and commanded that it shall hereafter enjoy the distinction of "Royal" and shall be elevated to the status of a "Royal Corps." Consequently, it will be known henceforth as the Royal Army Veterinary Corps.

The war office memorandum to Major General L. J. Blenkinsop, director general of the British Army Veterinary Services, announcing the action of the king, recited that "the corps by its initiative and scientific methods has placed military veterinary organization on a higher plane. The high standard which it has maintained at home and throughout all theaters has resulted in a reduction of animal wastage, an increased mobility of mounted units and a mitigation of animal suffering unapproached in any previous military operations."

American veterinarians, and especially those in our own army, will rejoice in this tribute to their English colleagues, who have so richly deserved it.

C. J. M.

Lieutenant W. W. Yard of Denver, Col., who, after finishing his training at Camp Greenleaf, was transferred to Camp Lee, was later sent "overseas" to the A. E. F.

Dr. Ray W. Gannett of Brooklyn had an interesting article in the Brooklyn Standard Union on Army Veterinary Service, and incidentally strongly condemned newspapers and journals for carrying the advertisements of correspondence veterinary schools.

Major Robert C. Musser, Veterinary Corps, with the 8th Division, while on his way across the continent from Camp Fremont, contracted pneumonia. Fortunately, he made a good recovery and expects to be with the division soon.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

Treasurer Jacob has purchased for the American Veterinary Medical Association \$3,000.00 worth of Liberty Bonds as directed by the Executive Board. He will also purchase the corresponding amount of Canadian government bonds.

Treasurer Jacob has forwarded through Colonel D. S. White, Chief of the American Army Veterinary Service in France, a sum of \$2,500 to be paid to Prof. Vallée. This amount is to be presented to Professor Vallee by Colonel White and also by the ranking Canadian veterinary officer on behalf of the American Veterinary Medical Association and is to be expended for the relief of needy veterinarians of the allied countries.

MAYOR BEHRMAN PROMISES COOPERATION.

New Orleans, La., December 16, 1918.

Dr. W. H. Dalrymple,
Roumain Building,
Baton Rouge, La.

My dear Doctor:

I have your communication of the 14th inst. advising that the American Veterinary Medical Association has favored New Orleans for its next meeting place, and that it will convene here October 13 of next year.

I shall gladly cooperate with you in every way in the direction of making the convention a very successful one.

With best wishes, I am,

Yours very truly,

MARTIN BEHRMAN,

Mayor.

SECRETARY'S OFFICE.

One of the problems that has confronted the Secretary, as well as the Editor of the Journal, has been the difficulty in

keeping track of the members that were in the army service during the past two years. Now that many of the veterinarians are being discharged from the service, it is important that they advise the Editor of the Journal and the Secretary of their new address in order that a record may be kept. It will be of great assistance if this is done promptly.

Another very important item is that the Secretary desires to secure the name and rank of every member of the Association that has been in service, in order that this may be made a permanent record on the Secretary's books. In many instances mail addressed to members has been returned marked "in the army" but without any other information. It is earnestly hoped that every veterinarian in the service will send in his service record promptly.

Captains Longley and McGuire and Major Stokes have secured 253 applications for membership in the A. V. M. A. from the veterinarians in training at Camp Greenleaf, Ga. These officers certainly deserve the "distinguished service medal" of the A. V. M. A. for their work in securing new members last year and this. We feel sure that all members of the Association appreciate their efforts. Captain Longley has recently been discharged and has returned to his home in California.

In December more than fifteen hundred letters were sent out to members who had not made remittance for their 1918 dues. A large number here responded to the appeal, and it is earnestly hoped that all will do so.

Two instances have come to the attention of the Secretary where families of deceased A. V. M. A. members seemed to be in need of assistance. The cases were referred to the Relief Committee and given prompt attention.

The following letter, suggested by President Moore, has been sent to all Resident Secretaries. It is so important that we feel that all members will be interested in it:

"To the Resident State Secretaries:

The by-laws of the new constitution of the Association defines the duties of the Resident Secretaries in Section 2 of Article 18 as follows: "Each Resident Secretary shall coöperate with the

Committee on Intelligence and Education and shall aid the President, Secretary and Editor of the Journal in such manner as they shall direct." It is clear, therefore, that the Resident Secretaries are important agents for the good of the Association.

We are in a period of reconstruction where every organization is being examined to ascertain what it is doing to meet after-war conditions. The purpose of the A. V. M. A. is to build up an efficient veterinary service in America. It stands for educational, civic and professional efficiency. Its members are the advisors and teachers of animal owners relative to the protection of their live stock against disease. Its annual meetings are veritable forums of great value to all who attend.

The rapid advance in knowledge of animal diseases and methods for their treatment and control present many new and often perplexing problems that the veterinarians must solve. Added to this, owners of live stock are asking for better service. The Resident Secretaries can do much if they will keep in touch with the ever-growing demands on the profession and bring forward the best there is to improve the veterinary work.

As Resident Secretary, you are to the Association in your community what a practitioner is to his clients—near at hand and ready to give advice promptly. You are the representative of this great Association in your state or province. What can you do to help and what can the officers do to help you? Let us all work together.

It is the desire of President Moore to have the present year the most successful in the history of the Association, in the promulgation of professional ideals and in attracting veterinarians who are not members to join us. In securing new members, however, it is the quality of the men and not the number that is desired. It is hoped that everyone will strive to maintain its standards in all phases of veterinary work. The Association is judged largely by the professional conduct and standing of its individual members. Will you not make a special effort to have its ideals accepted and followed by every veterinarian in your district? The war is over and after-war conditions must be met. Let us hope that veterinarians will not be found wanting in this new, patriotic service.

The Resident Secretaries should be of every possible assistance to the Editor of the Journal by furnishing valuable articles, case reports, practical veterinary suggestions and news items regarding members. This is one of their obligations to the profes-

sion. The officers want to help you and reciprocally they will appreciate most heartily any suggestions for the benefit of the Association that you may be willing to offer. We trust that in good work, this may be the banner year in our history.

N. S. M.

OTHER ASSOCIATIONS.

TENNESSEE VETERINARY MEDICAL ASSOCIATION.

The Tennessee Veterinary Medical Association held its tenth annual meeting at Memphis November 19-20, 1918. It was one of the best meetings the association has ever held. All members were very grateful to the War Department for sending such an able representative, Major R. M. Staley, who explained the Army Veterinary Corps and gave history of the same. There were some very interesting papers submitted and discussed by members, and a highly appreciated paper by Prof. C. A. Keffer of the Division of Extension, University of Tennessee, showing co-operative relationship of the veterinary and county agents.

The following officers were elected for 1919:

President—W. G. Shaw, Knoxville.

First Vice President—J. R. Hillman, Hickman.

Second Vice President—Wm. Bell, Nashville.

Secretary—F. R. Youree, Lebanon.

Treasurer—A. C. Topmiller, Murfreesboro.

A banquet was given the association by the Memphis doctors during the evening of November 19 and a sight-seeing trip to Park Field in the afternoon of November 20, assisted by the Commercial Club members of Memphis, to view the aviators doing their daring stunts. Every minute of time was utilized during the two days' session, all parting well pleased and looking forward to the next meeting, which is to be held in Nashville.

F. R. YOUREE, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The ninth semiannual meeting of the Central New York Veterinary Medical Association was held in Syracuse November 27, 1918, at the infirmary of Dr. H. A. Turner.

It was opened with a clinic at which the following cases were operated on:

No. 1, black mule, Dr. Dooling's case; quitor; surgeons, Drs. Danforth and Dooling.

No. 2, black horse, Dr. Dooling's case; paralysis of penis; surgeons, Drs. Clark and Dooling.

No. 3, black colt, Dr. W. M. Pendergast's case; fistula of the hip; surgeons, Drs. Bosshart and W. M. Pendergast.

No. 4, black mare, Dr. Sullivan's case; cystic ovaries, spayed; surgeons, Drs. Ide and Sullivan.

No. 5, chestnut mare, Dr. Sullivan's case; cystic ovaries, spayed; surgeons, Drs. Ide and Sullivan.

No. 6, bay gelding, S. P. C. A. case; roarer; surgeons, Drs. Danforth and Turner.

No. 7, bay gelding, Dr. Dooling's case; tumor of the ankle; surgeons, Drs. Danforth, Turner and Webber.

No. 8, female hound, Dr. Turner's case; spayed, in side; surgeon, Dr. W. L. Clark.

This closed one of the most interesting clinics ever held in the history of the society, and on account of the lateness of the hour it was decided not to go to the hotel for our business meeting, and we adjourned to Dr. Turner's office.

The business meeting was called to order by the president, Dr. J. M. Currie, at 4:10 p. m.

Roll call showed the following members present:

Doctors—W. G. Hollingsworth, W. B. Switzer, J. A. Pendergast, A. J. Tuxill, W. L. Clark, W. M. Pendergast, J. V. Townsend, M. W. Sullivan, F. C. Overton, H. A. Turner, F. E. York, J. M. Currie, E. E. Dooling, C. R. Baldwin, Almond H. Ide, J. K. Bosshart, A. L. Danforth, O. P. Jones.

Visitors—Dr. Leroy Webber, Dr. Carl Webber, Dr. J. W. Turner.

Minutes of the last meeting were read by the Secretary and upon motion duly made, seconded and carried they were approved and ordered placed on file.

Moved, seconded and carried that the papers for this meeting be carried over to our next annual meeting.

Dr. Hollingsworth made some very interesting remarks on "What is to happen during the great reconstruction period that is to follow the declaration of a world peace, and suggested that some of the members invite a layman from amongst their clients to attend the annual meeting in June, 1919, and that they be

asked to come prepared to give their views on the subject mentioned by Dr. Hollingsworth, and agricultural problems. The above suggestion was adopted.

Dr. Danforth suggested that the annual meeting in June— it being our tenth anniversary—be carried into the evening, and that we have a dinner at about five or six o'clock.

Moved by Dr. Clark and seconded by Dr. W. M. Pendergast that at the annual meeting in June, 1919, we have our clinic during the day following which we have a dinner and that we entertain our wives or lady friends at the dinner, and that following the dinner we hold our business and literary program. Carried.

Moved, seconded and carried that the President at his convenience appoint a committee to act with the Secretary to arrange for such a day and evening meeting.

Under the head of new business Dr. Hollingsworth presented the matter of internal revenue law and gave us his experience with the same in regard to the ten per cent tax on medicines put out under label, and informed us that there was a fine of not more than \$1,000 for non-compliance with said law.

Moved, seconded and carried that the Secretary take counsel and ascertain the exact law and send a copy of same to each member of this society.

There being no further business, an adjournment was taken at 5:50 p. m.

W. B. SWITZER, Secretary.

WESTERN NEW YORK VETERINARY MEDICAL ASSOCIATION.

The fifth semiannual meeting of the Western New York Veterinary Medical Association was held December 12, 1918, at the hospital of the Erie County Society for the Prevention of Cruelty to Animals, 121 West Tupper Street, Buffalo, N. Y.

After a short clinic in the early part of the afternoon the meeting was called to order by the President, Dr. J. L. Wilder of Akron, N. Y., and the regular order of business disposed of, which included the election of three new members to the association, which now nearly reaches the fifty mark. After enjoying a bountiful repast at the Teck Cafe, the association reassembled at eight o'clock at the S. P. C. A. hall and listened to addresses and papers until past midnight.

Dr. W. L. Williams of Cornell addressed the association on "Diseases of Breeding Animals," illustrated with specimens, which was highly interesting and instructive.

Dr. W. E. Frink of Batavia, N. Y., gave a very practical paper on "Sterility in Cattle and How I Treat It."

"Early History of Veterinary Education" was the subject of a paper read by Dr. H. T. Gaetz of Buffalo, N. Y. Dr. Gaetz certainly did justice to the subject and did not fail to mention any one that had ever been recognized as an educator in veterinary science from the earliest ages to the present time.

The "Question Box" drew no small amount of amusement and discussion and proved itself a good asset to the meeting.

The next meeting will be held the third week in June, 1919.

F. F. FEHR, Secretary.

DOMINION VETERINARY INSPECTORS ASSOCIATION OF CANADA.

On December 16 the Dominion Veterinary Inspectors Association enjoyed one of its best meetings yet held.

Through the very kind auspices of the Veterinary Director-General, the inspectors in charge of official establishments throughout Ontario were called to Toronto. Arrangements were also made for a representative from the Bureau of Animal Industry and in this connection we were favored by the presence of Dr. B. P. Wende, inspector in charge of Buffalo, N. Y.; Dr. Torrance, Veterinary Director-General; Dr. Barnes, chief inspector meat and canned food acts, and Dr. Lowrey, traveling inspector for eastern Canada, all of Ottawa, were present and assisted materially in making the meeting the great success which it enjoyed.

The morning was devoted to an inspection of the excellent abattoir and packing house of the Harris Abattoir Company, West Toronto, and as much of the plant as the time would permit was carefully gone over. After lunch, a meeting was called to order at 2:30 p. m. in the assembly hall of the Ontario Veterinary College, with Dr. Irvine, inspector in charge Toronto district, in the chair.

For this meeting no definite program had been prepared, but each inspector had been notified to come prepared to present for discussion some question of greatest importance to him in his

plant. This arrangement met with wonderful success, and the opportunity of such discussion with the chief and other members of the staff was appreciated to the fullest.

In the evening a meeting was held in the same room, with Dr. Cook, President of the Dominion Veterinary Inspectors Association, in the chair. Dr. Torrance, honorary president of the association, gave the address of the evening, but before entering into same he made an announcement to the staff which is deserving of more than passing notice. In connection with the Toronto district office he has donated an excellent scientific library, for which suitable accommodation, furniture, etc., is being arranged, and it is hoped to have everything in shape for an official opening on the next regular monthly meeting of the Association. Furthermore, he announced completion of arrangements whereby pathological and bacteriological laboratory diagnosis is in future to be handled in Toronto by Dr. Allen, professor of these subjects at the Ontario Veterinary College, instead of forwarding the material to the biological laboratory at Ottawa, as in the past.

The need and advantages to be derived from such arrangements have been felt for some time and the common belief is that the service and usefulness realized will be fully in accord with the anticipated benefits to be derived. Needless to say, the staff fully appreciates and is very thankful for such assistance.

Dr. Torrance's address was given on the history of veterinary education in Canada. He carefully reviewed the work done from the inception of courses of study at the Ontario Veterinary College, the Montreal Veterinary College, later Department of Comparative Medicine of McGill University, and the course given in French by the Department of Comparative Medicine of Laval University. This address was highly instructive and very entertaining and was enjoyed very much indeed. Dr. Barnes, honorary vice president; Dr. McGilvray, honorary member, Dr. Lowrey and Dr. Wende, guest of the evening, each spoke briefly but entertainingly.

There was an excellent attendance of members and a goodly number of guests from the faculty of the college, together with several veterinarians of the local staff of the contagious disease division.

At a meeting of the executive committee of the Dominion Veterinary Meat Inspection Association it was unanimously resolved:

That whereas our associated existence is avowedly based upon an effort to attain a better and more highly educated service, we have been met by our chief or honorary president much more than wholeheartedly. Speakers from our departmental heads have been freely given, everything, in fact, to raise our professional status, for all of which we are most deeply indebted.

We desire to express our especial gratefulness for the splendid educational opportunity he has presented to us in the form of a valuable library contribution, a library filled with the latest and best works known to the profession.

We are united in recording our heartiest approval of the laboratory arrangement he has proposed and worked out for our benefit, and from which we expect to derive so much. We sincerely hope that it may be the nucleus of a movement that will be viewed with an ever-growing pride as it proceeds. That we respectfully desire in the deepest sense of appreciation to express our associated thanks to our honorary president and official chief, Dr. Torrance, for all the kindly interest he has shown in our behalf.

WM. TENNANT, Secretary.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The thirty-sixth annual meeting of the Ohio State Veterinary Medical Association was held at the New Southern Hotel, Columbus, Ohio, January 9 and 10.

The unusually large attendance, and the great interest manifested, and particularly the large number of applications received for membership, was conclusive evidence of the fact that the association is a real, live organization.

A hearty welcome was delivered to the association by Mayor Karb. Among the various points of interest touched upon by the mayor, he emphasized particularly the necessity and importance of efficient veterinary municipal inspection of dairy and meat food products. Dr. Harry T. Moss, Dayton, in his pleasing and appropriate manner of expressing himself, gave a hearty response to the address of welcome.

In the presidential address, Dr. A. D. Fitzgerald gave in detail the history of the association, and in a few well-chosen remarks outlined the future possibilities of the profession, and expressed that he believed it good judgment in stating that agricultural pursuits are really dependent upon the veterinary pro-

fession instead of the dependency of the profession on agricultural interests.

In the report of the Secretary for the work of the fiscal year it was shown that the finances of the association were in a flourishing condition. The report also urged the advisability of the publication of papers of merit read before the body. Action taken by the association on this matter was to the effect that such papers be published in the current veterinary journals. It also emphasized the importance of, and urged that all members of the organization that do not now hold a membership in the American Veterinary Medical Association, make application for membership in the parent organization.

Dr. S. S. Sisson, professor of anatomy, veterinary department, Ohio State University, in his usual precise manner, gave the report of the Committee on Progress and Education. Its completeness was commendable, indeed.

Among the highly commendable papers were the following:

"Some New Surgical Methods, Illustrated," by Dr. N. S. Mayo, Chicago, Ill., Secretary of the American Veterinary Medical Association.

"Hemorrhagic Septicemia in Swine," by Dr. Edwin A. Cahill, Indianapolis, Ind.

"The Pathology of the Reproductive Organs in Sterility," by Dr. E. T. Hallman, department of animal pathology, East Lansing, Mich. Dr. Hallman's address was very concise and interesting, explaining in detail the fundamentals in the cause of sterility.

In the paper read by Dr. J. E. Gibson, Bureau of Animal Industry, on "Tuberculosis Eradication," he explained the aims and methods of the bureau, with respect to the tuberculin test and the placing of herds on the accredited list. It was well taken.

The election for officers for the ensuing year was keenly contested and the results were as follows:

President—Dr. W. B. Washburn, Tiffin.

Vice President—Dr. O. V. Brumley, Ohio State University, Columbus.

Secretary—Dr. R. I. Bernath, Wauseon (reëlected).

Treasurer—Dr. D. C. Hyde, Assistant State Veterinarian, Columbus.

Executive Committee—Dr. D. M. Swinehart, Columbus; Dr. A. J. Kline, Wauseon; Dr. J. F. Planz, Akron.

R. I. BERNATH, Secretary.

N. A. B. A. I. V.

The following resolution was unanimously adopted by the United States Live Stock Sanitary Association at Chicago, Ill., December 4, 1918:

Whereas, the success of a profitable and progressive live stock industry depends, to a large degree, on an adequate control of communicable diseases to which our domestic animals are susceptible, and

Whereas, the important duty of safeguarding the health of our immense live stock industry depends largely upon the efficiency and devotion to duty of the veterinarians employed by the United States Bureau of Animal Industry, whose services in the past have been of untold benefit in the conservation of our live stock resources, and

Whereas, it is generally recognized that many of the most capable members of this organization have severed their connection with the department, to the detriment of public interest and of the nation's service, because of the inadequate salaries paid by the department, and

Whereas, the present high standard of veterinarian's requirements demanding high school entrance examination and four years of special college training to qualify applicants for the B. A. I. service, and the ever increase in the high cost of living, have made the always parsimonious compensation of veterinary inspector in the B. A. I. service inadequate and unfair to those public servants, and

Whereas, it is recognized that even the nation can not expect the best of service out of its employees unless they are fairly compensated,

Therefore be it resolved, that a committee of this association be appointed to present the facts set forth in these preambles to the Secretary of Agriculture and, if necessary, to members of the Congress, urging them to give the veterinarians of the B. A. I. service such increases in their salaries as their respective services justify.

The following were appointed members of the committee created by the foregoing resolution:

Matt S. Cohen, Chairman, Kentucky Live Stock Sanitary Board, Frankfort, Ky.

E. S. Bayard, Editor of the National Farmer and Stockman, Pittsburgh, Pa.

H. H. Halladay, President of the Michigan Live Stock Sanitary Board, Lansing, Mich.

A. J. Glover, Associate Editor of Hoard's Dairyman, Fort Atkinson, Wis.

Cassius Way, Chief Veterinarian of Borden Condensed Milk Company, New York, N. Y.

Tait Butler, Editor of Progressive Farmer, Memphis, Tenn.

J. Thompson Brown, Chairman, Virginia Live Stock Sanitary Board, Richmond, Va.

ORGANIZATION OF THE BUREAU OF ANIMAL INDUSTRY EMPLOYEES IN LOUISIANA.

At the representative meeting held in Baton Rouge, La., on January 11, 1919, of the forty-three veterinarians now stationed in Louisiana, in connection with the work done by the United States Bureau of Animal Industry in reference to meat inspection, tick eradication, equine influenza, tuberculosis eradication and hog cholera control, the Louisiana division of the Bureau of Animal Industry Veterinarians was organized and the following officers elected:

President—Dr. E. I. Smith, Baton Rouge, La.

Vice President—Dr. R. W. Tuck, New Orleans, La.

Secretary and Treasurer—Dr. R. V. Rafnel, Baton Rouge, La.

The objects of this association are to advance the professional and material interests of the veterinarians of the United States Bureau of Animal Industry; to affiliate with the various medical and live stock sanitary associations in securing legislation for the material advancement of the veterinary profession and promotion of the live stock industry; to coöperate with the officials of the United States Department of Agriculture in promoting the efficiency of the bureau service and to uphold the civil service rules and regulations, and to encourage all bureau veterinarians to become members of the American Veterinary Medical Association.

Dr. W. H. Dalrymple, Dr. E. Pegram Flower, Dr. G. E. Nesom, Dr. Oscar Dowling and Prof. W. R. Dodson were elected honorary members.

SOUTHEASTERN STATES VETERINARY MEDICAL ASSOCIATION.

An excellent program has been arranged by the Secretary, Dr. G. A. Roberts, for presentation at the Birmingham, Ala., meeting of the Southeastern States Veterinary Medical Association, February 20-22, inclusive.

Among the subjects on the tentative program received may be mentioned the following:

Infections and Immunity.

Influenza and Associated Complications in the Horse and Mule.

Hemorrhagic Septicemia in Cattle.

Swine Plague and Mixed Infections of Swine.

Hog Cholera Control.

Anthrax and Blackleg.

Forage Poisoning.

Veterinary Service in the Army.

Abortion Disease.

Reconstruction Problems Confronting the Veterinarian.

State Laws Regulating Interstate Shipments.

Besides the presentation of papers, there are numerous important diseased conditions down for discussion.

In addition to the local veterinarians, a number of visitors are expected to read papers and lead in the discussions. Among the latter we note the following prominent members of the profession, and of the A. V. M. A.: Drs. A. T. Kinsley, E. A. Cahill, A. Eichhorn, Robt. Graham, L. A. Klein, I. C. Brenner, N. S. Mayo, H. Jensen, E. T. Hallman, D. M. Campbell, R. C. Moore, C. E. Salsbery, etc.

It is to be hoped that the Journal may be favored with some of the manuscripts for publication for the benefit of our readers.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS.

PROTECTING A TEN-BILLION-DOLLAR INDUSTRY.

[This is the first of a series of articles on the protection of the live stock industry of the United States. Those that follow will deal with the more important diseases and what is being done toward their eradication.]

At first thought it may seem foolish to ask a man what he would do were he suddenly to come into possession of 75,000,000 hogs, 50,000,000 sheep, 69,000,000 cattle and 26,000,000 horses

and mules, but perhaps it isn't. Uncle Sam, who is the most extensive up-to-date farmer in the world, owns that much live stock, and for good measure there is a large flock of poultry scratching round the place. Every man who is a stockholder in this concern may do well to try to put himself in fancy in the place of this wealthiest of stockmen who in this particular business alone is ten times a billionaire.

Well, what would you do? Count 'em? No, that doesn't look quite like the first job. The chances are that you would first make sure that the herds and flocks were reasonably safe from contagious diseases. In other words, you would want some insurance—not insurance in the ordinary sense, but real protection that would actually prevent loss. The greater the live stock population the more necessary is a permanent plan of defense and capable men to carry it out. It is one of the first essentials of good business.

When the live stock industry of America developed to such an extent that outbreaks of disease became a serious menace to the welfare of the country, steps were taken to reduce the danger. It was an outbreak of pleuro-pneumonia in cattle that was the direct cause of the establishment of the Bureau of Animal Industry. That Bureau now has many more duties, but preventing diseases from entering the country, checking the spread of those already here and protecting the public against products of diseased animals is a large part of the work and requires the services of 1,600 trained veterinarians. The class of work that these men perform may be judged by the requirements they must fulfill. At present all men entering a veterinary college must have had at least two years of high school training. Those entering next year must have three years, and thereafter no man may enter one of these schools if he has not had a full high school course of four years. The course at a veterinary college, as recognized by the American Veterinary Medical Association, the War Department, the United States Civil Service and the United States Bureau of Animal Industry, must extend through four years, nine months to the year, which puts graduates on a par with graduates of universities. Many of the men who occupy the more responsible positions were graduates of colleges and universities before taking up their special line of work.

Since 1884, when act of Congress established the Bureau of Animal Industry and Dr. D. E. Salmon was appointed chief, the American live stock industry has been protected from plagues of

all sorts from without the borders of the country, and those already here are gradually being conquered. The most destructive diseases, such as foot-and-mouth and rinderpest, which exact an enormous toll every year in some foreign countries, have been prevented by this country's system of policing from ever gaining more than a temporary hold on our farms. Rinderpest has never gained entrance. No thoughtful man can doubt that the establishment of this Bureau in the nick of time has prevented the cost of food production from being much higher than at present.

If hog cholera could be eliminated—and there is every reason to believe that it can be done—how much more efficient would be the farms of the great Corn Belt and those of other sections that are now larding the incomes of their owners.

A report of the United States Live Stock Sanitary Association estimates the average losses from cholera at \$50,000,000 a year for the last forty years, which means that losses have been much greater in later years on account of the large increase in the number of swine. That annual loss represents 4 per cent interest on an investment of \$1,250,000,000. In forty years the loss has amounted to \$2,000,000,000, nearly twice as much as the theoretical investment.

In 1914 the swine industry paid a toll of \$75,000,000 to this devastator of herds. But there is encouragement. The use of anti-hog-cholera serum, a preventive developed by the Bureau of Animal Industry, is increasing rapidly. The loss during the year ending March 31, 1918, is estimated to be \$32,000,000, a reduction of 60 per cent in less than five years. In Iowa, the hog hub of the world, nearly 3,000,000 hogs died of cholera in 1913. In 1917 the loss was a little less than 189,000. In that State alone twenty Federal veterinarians are at work continually investigating outbreaks of cholera, establishing quarantine and applying sanitary measures for the control of the disease, encouraging the use of serum, and assisting in the reduction of cholera losses.

Some spigot economists look upon the expenditure of \$500,000 annually to fight hog cholera as an extravagance, but when we consider that the smallest annual losses recorded was sixty times this amount it begins to look as if State and Federal authorities should not hesitate to ask for more funds and to pay large enough salaries to hold the experienced men.

The spectacular defeat of the cattle tick in the Southern States is a wonderful chapter in the history of the fight against live stock pests and plagues. The first appropriation for this work

came in 1906 and now, twelve years later, nearly seventy per cent of the wide territory originally infected is free and ready for the development of a great live stock industry.

A Bureau of Animal Industry official made the all-important discovery that Texas fever is caused by an organism transmitted by the cattle tick. Another Bureau officer worked out the life history of this insect, enabling others of his profession to develop practical methods of eradication. With very few exceptions veterinarians have directed the work of eradication right down to the individual farm. But they have not dared to estimate what the results mean in real money to the South and in food for the whole country. They are too conservative for that. But even a real estate promoter would hardly be apt to put the figure too high.

One of the most widespread and costly diseases of domestic animals is tuberculosis. The cattle and swine industries suffer enormously year after year. The president of the Chicago Live Stock Exchange recently estimated that the loss every twelve months is equal to seventy trainloads of live stock of forty cars each, mostly hogs. Men in the Bureau of Animal Industry estimate that the country loses \$40,000,000 every year as a result of this slow-moving but persistent plague. For years but small progress was made toward getting it under control, but during the past year the accredited herd system has been applied nationally by the Bureau of Animal Industry in coöperation with the state live stock sanitary authorities and the United States Live Stock Sanitary Association. The fight is now being waged on the principle that eradication of tuberculosis is an economic question. Money has been appropriated by Congress for the purpose of partly reimbursing owners of cattle whose animals have been slaughtered in the campaign for clean herds. Herds that come up to the requirements receive a certificate of approval from the Bureau. Coöperative work has already been started in forty states. After one year of work under the new plan 289 breeders have had their herds accredited. More than 1,400 herds have passed the first test. There are 3,320 grade herds and 867 herds of pure breds under supervision being prepared for the test. Altogether, there are about 6,000 herds under supervision, a fair indication that the system finally devised is making a strong appeal to cattle owners. As more states arrange to take advantage of Federal assistance it will be necessary for Congress

to appropriate more money to help reimburse owners for animals that must be slaughtered and to employ the necessary experts.

Of all the activities of the Government veterinarians that of meat inspection is probably best known to the public. This work will continue to be of vast importance so long as disease is so widespread among our farm animals. The food supply must be protected from diseased or otherwise undesirable meat. The great scope of this work of protecting the consumer's meat supply is evident when we consider that inspection is maintained at about 850 plants and that every year nearly 60,000,000 animals are given both the antemortem and postmortem examinations. The information obtained by the inspectors is not only useful in protecting the food supply, but it provides the most conclusive argument for increased work and expenditures in eradicating animal diseases. What we can afford to pay to eradicate them any man can figure out for himself when he knows that practically a quarter million carcasses are condemned every year as unfit for human food.

The battle against the outbreak of foot and mouth disease in 1914 is still fresh in the memories of stockmen. It cost the country millions of dollars to kill the infection, but as a result our herds are free from this destructive scourge. Several outbreaks have been stopped in the past and no one knows how many have been prevented from entering the country by our quarantine service. Right at this time there is an outbreak in England, but it is not probable that one droplet of the virus will get by our quarantine.

At one time scabies of sheep and cattle levied a big tax on the industry, but the parasite causing this disease is now pretty well under control. Millions of animals are inspected each year and several millions are dipped. Dourine, a dangerous disease of horses in large areas of the West, is being brought under control rapidly and the prospects are that it will soon be eliminated except on some of the Indian reservations, where the work is exceedingly difficult. Contagious abortion, which probably causes an even greater monetary loss among cattle than tuberculosis, is not yet well understood, but scientists of the Bureau are continually making investigations and tests with a view toward developing an immunizing agent or finding means for preventing infection.

This brief review of the work that has been done or is being done to protect the live stock industry of America can give only

a meager idea of the complexity of the job that is before our Government veterinarians who act as police and secret service, one might say, who guard our cattle, horses, hogs and sheep from alien enemies. To weaken this force would seem like an economic crime, but it is being weakened to a dangerous extent. For the last four or five years the Bureau of Animal Industry has been losing many of its very best men. They have gone into private biological laboratories, to serum-producing plants, they have taken up ranching or have gone into other commercial enterprises. The exodus has not been caused so much by the lure of the dollar as by the unceasing pressure of the cost of food, clothing and house rent. And when an old friend, a practicing "vet," says he is making as much in a month as he could make in a year if he were "working for the Government," some man is apt to wonder whether he is doing the right thing by his family, and finally concludes that he isn't.

But are we going to let a ten-billion-dollar industry run along without insurance?

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

At the annual meeting of the Ohio State Veterinary Medical Association Dr. Case, Resident Secretary of the A. V. M. A., made a plea for new members for the national association. Secretary Mayo also spoke in behalf of the A. V. M. A., and a good number of applications were filled out at once, and many others were promised.

The "Buckeye Bunch" will make a good showing at the next meeting of the A. V. M. A. in New Orleans.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of the Veterinary Medical Association of New York City was held in the lecture room of Carnegie laboratory on Wednesday evening, January 8, 1919, at 8:30 o'clock.

The president-elect, Dr. Cochran, was in the chair.

The minutes of the December meeting were read and approved.

The roll of members was called and changes of addresses noted.

The president, Dr. Cochran, thanked the association for the honor of electing him president and gave an interesting address on "The Value of Veterinary Associations." Dr. Cochran reviewed the early history of this association and the good work it had achieved since it was established in 1894.

Dr. Chas. H. Higgins, B.S., D.V.S., of Ottawa, Canada, was then introduced and gave an instructive and interesting address on "Veterinary Education and Control Work in Canada." The Doctor gave a history of veterinary educational work in Canada from 1862, when Drs. Andrew Smith and Duncan McEachran arrived in Canada from Dick's College in Edinburgh, Scotland, establishing the Ontario Veterinary College in 1862. In 1863 Prof. McEachran established the veterinary school at McGill University in Montreal, which continued until 1892. The Doctor stated that veterinary education is established on a firm basis in Canada at present, with two veterinary colleges under government control, the English school at Toronto, affiliated with the University of Toronto, and the French school, connected with Lavelle University. Dr. Higgins said there was splendid opportunities for veterinarians to engage in practice in Western Canada, especially in Alberta and British Columbia. The veterinary practice laws are excellent and fees good. The Doctor then gave an interesting history of sanitary control work in Canada, in which he has been actively engaged since 1892. In 1902 Dr. Rutherford was made head of the Health of Animals Bureau. Dourine had made its appearance in western Canada and glanders was spreading. The Doctor told of the first cases of dourine which were of an acute type. The later cases assumed a chronic form. Mange is controlled by dipping, using sulphur, linseed oil, and oil of tar. The control of hog cholera is radical: slaughter, disinfection, no hogs allowed on premises for three months and compensation by the government. No garbage is allowed to be fed to hogs unless cooked and a government license is required to feed it. Under these measures, the Doctor said, hog cholera is practically eliminated in Canada.

Dr. Higgins was identified with the first tuberculin testing of cattle in 1899. At that time great numbers of pure-bred cattle were being imported into Canada from England and Scotland. Tuberculin tests were used on these cattle, which were kept in quarantine three months after landing.

The Doctor gave an interesting account of the Pickton cattle disease which appeared in Nova Scotia in 1891. This disease attacked large numbers of cattle and was rapidly fatal, causing an œdema between the coats of intestines and inflammation of the liver. Feeding experiments were carried out by Dr. Osler, who found the disease was caused by the poisonous weed "*Senecio Jacobæa*," or ragweed. It was found that by putting sheep and goats to pasture they cleaned out the weed and the disease disappeared.

Dr. John De Vine mentioned that as there was some prominent visitors present whom we would be pleased to listen to, he would prefer postponing his talk on "Breeding Problems" until a future meeting.

The privilege of the floor was extended to the visitors present.

Capt. Otis A. Longley of San Francisco, Cal., gave an interesting talk on his experience as a veterinary instructor at Camp Greenleaf. He emphasized the establishment of a high standard of education in the colleges, and mentioned the vast difference in men under his command from the various colleges. The men were graded at the camp according to their personality, loyalty, ability and professional qualifications. He said that about thirty men were rejected and returned to civil life as unfit to be veterinary officers. The Captain stated that the men from New York were uniformly well up in professional attainments. He pleaded for a larger membership for the A. V. M. A. and said he had been instrumental in turning in over 400 applications from among the veterinarians in training at Camp Greenleaf to the last meeting of the A. V. M. A.

Captain Harry Ticehurst, Moosemire, N. J., told us of his experience of sixteen months' army work. The Captain's work was mostly at Newport News in mallein testing and inspection before exportation. He said they inspected and shipped as high as 1100 horses a day at times. The Captain said he had considerable hospital work at Newport News, where the best military hospital in the country is maintained. He was later appointed veterinarian at Camp Sheridan, where he had a number of veterinarians under his command. He was later made Division Veterinarian and ordered to prepare for overseas duty, but his orders were cancelled just before sailing.

Dr. J. P. Lowe was present and extended to the members an invitation to attend the annual meeting of the Veterinary Medical

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VIGILANCE BUT NOT ALARM.

Within the past six months two outbreaks of foot-and-mouth disease have occurred in England, this time in the County of York, which was confirmed on January 10, notification having at once been sent by the British authorities to the Bureau of Animal Industry at Washington. The Bureau was also informed that the British veterinary authorities had the infected area under quarantine, and that the outbreak was under control, which is very gratifying news indeed. However, the Bureau has cancelled all permits for the importation of cattle, sheep and swine from that country, and is taking special precautions for the inspection and quarantine of such animals now enroute to the United States. There is every need of vigilance concerning the matter, but not necessarily of alarm, although, on account of the constant communication between the two countries, it is extremely important that veterinarians and stockowners all over the country should keep a sharp lookout for any condition that might appear suspicious in those animals that are especially susceptible to the disease.

We understand that the Canadian officials have also been notified of this latest outbreak in England. Let us hope that the British veterinary officials may be able to eradicate the present

local infection and prevent its getting further, which we have every reason to hope they will.

VETERINARY EDUCATION AND THE WAR.

From data published by the Office of Information, U. S. Department of Agriculture, it would appear that in the twenty-one veterinary colleges in this country accredited by the Bureau of Animal Industry, the attendance diminished very materially last year, the dean of one of the colleges reporting that, owing to war enlistments, he had lost 50 per cent of the faculty and 66 per cent of the students. The number of freshmen enrolled in all veterinary colleges of the country for the 1917-1918 session was 338, against 637 for the preceding year, a decline of about one-half. The total attendance at all veterinary colleges showed a falling off of more than 800 students, with a further reduction indicated for the session of 1918-1919.

As interpreted by the Bureau of Animal Industry, the effects of the reduced attendance in veterinary institutions will be felt more in the future than at present, for the coming graduating classes will be unusually small.

In view of these facts, it is urged by the Bureau that, until veterinary education and the profession generally can be restored to at least its pre-war development, live stock raisers use extreme care in safeguarding the health of their animals, and should report promptly to state and federal authorities all suspected cases of contagious disease. They should remember, also, that sanitation and other preventive measures will assist greatly in reducing animal ailments. Attention is further drawn to the necessity to encourage persons of proper fitness to engage in veterinary studies, so that there may be an adequate number of trained men to respond to emergency calls, and for prompt control of epizootics. As the Bureau suggests, the effects of the war on the profession will be felt more in the future than at present, owing to the shortage of matriculants at the colleges, and this condition will probably affect sanitary control work more than any other branch. Hence the importance, until the shortage of graduates is made up, of stockowners themselves safeguarding the health of their animals, and of reporting suspicious cases of disease to the proper authorities. The suggestion, also, to encourage, as much as possible, eligible and fit young men to take up the study of veterinary science, not only for their own sakes, but

for the benefit of the live stock interests of the country, is a good one, and quite timely.

THE ERADICATION OF TUBERCULOSIS.

When the question of tick eradication in the South was first presented to Congress in order to obtain an appropriation from the Federal Government wherewith to make a start, there were many "doubting Thomases" as to the feasibility—in fact, possibility—of ridding the Southern States of their cattle ticks. This opinion was held, not only by the country folks who were living amongst those parasites, but by the more intelligent classes, but who were not, of course, familiar with the subject. The Southern cattle owner said, "It just can't be done; why, the woods are full of them and they are all over every little animal that runs around." If this had been absolutely so, the undertaking would, indeed, have been a more serious one. However, our farmer friends were not then aware that, while there are quite a number of different varieties of ticks, each preying upon its own particular host, the only one which was a carrier of the protozoan of tick fever was the common cattle tick, which developed only on horses, mules and cattle, and to get rid of it meant the elimination of Texas (or tick) fever, which has been the bane of the Southern cattle owner, and has held the South back, agriculturally, more than any other single factor. Today, after twelve years, or so, of persistent effort, the problem of tick-freedom has been almost solved. It has taken time and an abundance of patience, which the accomplishment of big things invariably requires.

But while the work of tick eradication affected one section of the country only, the eradication of tuberculosis is a country-wide undertaking, and will require the best that is in the veterinary profession, both individual, state and national, to accomplish final results within a reasonable space of time. Still, the example set by the work of tick eradication, with its many obstacles to overcome, should be a good object lesson, as well as a stimulus, to those engaged in the work which will have to cover a much greater area of country; and when it has been accomplished, what a splendid boost it will have been to the veterinary profession, and a most exceptional opportunity for the profession to have raised itself in the estimation of the public, and gained greater public confidence.

According to information published in the *Weekly News Letter* of the U. S. Department of Agriculture, very satisfactory progress has been made during the first year of the work, and prospects for the future are bright. During the year 296 herds, comprising 9,284 cattle, have been fully "accredited" as free from tuberculosis, and 1,462 herds, having 35,052 cattle, passed one successful test in preparation for certification. In addition, 4,622 herds, both pure-bred and grade, totaling 98,002 animals, have been under supervision for the eradication of tuberculosis; and each month additional herds are being added to the list. A revision of List No. 1 of accredited herds is promised in the near future, when it will be widely distributed.

The work, as we have said, is countrywide, and from a printed table in the *News Letter*, is already being pursued in practically every state in the union. It is a great work from many standpoints. It is so, from the standpoint of humanity; from an economic point of view; and is, or ought to be, from the viewpoint of the veterinary profession, if it will only take full advantage of the exceptional opportunity.

Dr. A. C. Goebel of Congers, New York, has become assistant to Dr. Robert S. McKellar of New York City. Dr. Goebel was trained at Camp Greenleaf, released from service, entered the B. A. I., and now goes into general practice. Larger compensation for Bureau veterinarians must be offered and assured.

Captain Charles S. Chase, recently stationed at Deming, New Mexico, one of the teaching staff of the New York State Veterinary College, New York City, has resumed practice at Bay Shore, Long Island, and instruction at the college.

Lieutenant Joseph P. Mack of Tappan, New York, has been released from the Army Veterinary Service at Camp Apache, Arizona, and has returned to New York.

Lieutenant David McAuslin of Brooklyn has resumed practice after many months of service in the Army Veterinary Corps at Camp Dix, Newport News, and Hoboken. The Lieutenant has been placed in the Reserve Veterinary Corps. His experience in transport service prior to entering our own war service made him a valuable addition in remount and transportation service.

Dr. E. M. Wiggs of Greenville, Texas, has been appointed State Veterinarian of the Lone Star State.

PRELIMINARY REPORT ON THE VALUE OF THE BLOOD TESTS IN THE CONTROL OF CON- TAGIOUS ABORTION.*

C. P. FITCH, W. L. BOYD, W. A. BILLINGS,
University Farm, St. Paul, Minn.

(Published with the approval of the Director as Paper No. 131 of the Journal Series of the Minnesota Agricultural Experiment Station.)

Since Widal in 1896 used the agglutination test in the diagnosis of typhoid fever much work has been done to apply the principle thereby demonstrated to the diagnosis of other diseases. M'Fadyean at about this time showed its value in the diagnosis of glanders. Schütz and Miessner and also Schnurer verified the work of M'Fadyean and clearly showed the value of the agglutination test in the control of this disease of horses.

In a like manner following the demonstration of complement fixation in the diagnosis of syphilis by Wasserman in 1906 this test has been widely used. It is of particular value in the early recognition of glanders and dourine of horses.

The application of these blood tests in the diagnosis of contagious abortion of cattle was demonstrated at about the same time (1909) by M'Fadyean of England and Holth and Wall of Denmark. Since then many workers have published accounts of the use of agglutination and complement fixation in the recognition of abortion disease. Among these should be mentioned Brüll, Grinsted, Larsen, Surface, Mehler and Traum and very lately Rettger and Davis.

The precipitation test was used by Szymanowski for diagnosing infectious abortion. The results obtained by this method, however, were unsatisfactory and so far as known this test has been used very little.

We have been working with the blood tests since 1912. Many things have come up in connection with them that have made us doubt their present value in the control of this disease. The results actually reported in this paper are only those which serve to illustrate the points in question.

In another publication in 1913, one of us in conjunction with Moore pointed out the difficulties which are encountered in the use of the complement fixation test in this disease. There is

* Presented at 55th Annual Meeting A. V. M. A., Philadelphia, 1918.

present in all blood serum from cattle a substance which has been called "colloide de boif" and was afterwards designated "conglutinine." This substance in conjunction with complement will produce agglutination and hemolysis of the washed red blood corpuscles of sheep. This phenomenon is the basis of the conglutination test which has been critically studied. This latter test is founded on the discovery of Ehrlich and Sacks, who combined in a test tube the fresh blood serum of a horse, the inactive (heated to 56°C for one-half hour) blood serum of a cow and the washed red corpuscles of a guinea pig. An agglutination of the red corpuscles and hemolysis occurred. This phenomenon was further studied by Bordet and Gay. The blood serum of all cattle contains a thermostable body which hemolyzes the red blood corpuscles of sheep. It is, of course, upon this reaction (hemolysis) that the complement fixation test depends and on account of the natural hemolysins which exist in all cattle blood serum, the results of complement fixation are thereby affected. It is true that the amount of cattle serum used in the complement fixation test for infectious abortion is small and thereby the hemolyzing action slight; nevertheless, in our study of the conglutination test we found that the amount of "conglutinine" contained in the sera of cattle varied in a wide degree and sometimes even the small amount of serum used in the fixation test was sufficient to cause hemolysis. This factor renders the results obtained by complement fixation open to question in certain cases where conglutinine is present in considerable amount.

Thomsen, working in Jensen's laboratory, where Holth and Wall did their work, found that if the serum of animals is inactivated (heated at 56°C for 30 minutes) the results are unreliable. That is, in the sera tests for contagious abortion in cattle, the inactivation of the serum for the complement fixation test is not only unnecessary but probably injurious. Nearly all the tests by this method so far reported have been done with inactivated serum.

Surface in this country found that the bacteriolytic amboceptor for infectious abortion existed in the blood of twenty-nine out of forty-three guinea pigs killed for complement and further he shows that an excess of cow's serum has an inhibiting effect on the hemolysis. In other words, Surface demonstrated that by varying the amount of the serum of the animal tested he could obtain strong positive reactions using 0.8 c.c. of serum. If he decreased this amount, for example, to 0.08 c.c. the reaction was

negative. But if the amount of serum was further decreased to 0.0008 c.c. the reaction again became strongly positive. The inhibiting effect of excess cow serum varied in a marked degree in the nine animals tested.

During 1914-15 one of us carried out a large number of blood tests for abortion disease, duplicate samples of which were sent to the Bureau of Animal Industry at Washington, D. C. (These are reported by Williams). Here both agglutination and fixation were carried out. In nearly all instances the agglutination tests at both laboratories agreed. In some instances, however, the results of the complement fixation test did not agree with those obtained by the agglutination method. As a general rule, however, the results of both tests were similar. Rettger and Davis state that in their work that the "results obtained by these two methods have been most gratifying." It is significant to note, however, that the same authors state further that, "Agreement between the results of the two tests was earnestly sought and no test was pronounced positive or negative unless the reactions were in perfect accord." They fail to state, however, in just what cases the results obtained by the two methods varied, but it seems as if it were safe to assume that in these results there were some variations.

Taking into consideration, first, that three factors (conglutinine, inactivation and inhibition) may influence the results of the complement fixation test; second, the complexity of the technic of the test, and, third, that the results of this test in the majority of cases agree with those obtained by the agglutination method, we do not believe that the complement fixation test has any advantage over the agglutination test in diagnosing contagious abortion. Mohler and Traum state that in their experience "Only in doubtful cases would it be necessary to refer to the more complex complement fixation test." These latter cases are very few in number and we question even in these whether the complement fixation test would aid in the diagnosis.

Seddon in 1915 pointed out several very important factors in connection with the agglutination test for abortion. Among other things he states that the amount of serum used is the dominating factor and not the degree of dilution in which it is employed. This same fact has been noted by other investigators, especially from continental Europe. In reporting the results of this study we are giving both the dilution and the amount of serum used.

The method used in reporting this work is one that has been followed since 1910, when reporting the results of the agglutination test for glanders. The amounts of serum employed or dilutions have been selected only after much experimentation to determine just which amounts gave the most knowledge concerning the presence or absence of the agglutinating antibodies. The abbreviation "SL" (slight) is used to indicate a partial reaction which does not show perfect clearing, but does show some sedimentation. The signs + and — are used to indicate a complete and a negative (no agglutination) reaction respectively. Hadley has recently proposed a uniform system for reporting the results of the agglutination test. While recognizing the need of such a system, we have not adopted it in this work, as some of the results were obtained before the publication of this article by Hadley.

Another factor which influences the results of the agglutination test is the concentration and amount of the bacterial suspension employed as test fluid. Seddon in his work used 0.5 c.c. of what he calls "Standard X" emulsion. This is chosen because (1) it gives a marked naked eye deposit (and hence is easily read) in a positive reaction; (2) conversely it gives a definitely cloudy appearance (and hence easily read) in a tube where there is no agglutination; (3) it is the minimum amount of emulsion that will answer the above requirements. If the test fluid is too heavy (concentrated) in a positive agglutination a deposit will form on the bottom of test tube, but the fluid still remains cloudy. It is very important that as nearly as possible a uniform suspension be employed and we believe that this is best secured by comparison to a standard suspension of barium sulphate, the idea evolved in connection with the Nephelometer. This method is crude, but it seems to be sufficiently accurate to give uniform results.

The results obtained in testing a sample of blood are oftentimes confusing to interpret. For example, in working with sera from certain animals an agglutination will be observed in those tubes which contain 0.05 c.c. and 0.02 c.c. of serum (dilutions of 1-20 and 1-50), no agglutination in the tubes having 0.01 c.c. and 0.005 c.c. (dilutions of 1-100 and 1-200) and again perfect agglutination in the tubes containing 0.002 c.c. and 0.001 c.c. (dilutions of 1-500 and 1-1000). We have always referred to these as "paradoxical reactions" and in the early part of our work these very confusing phenomenon were not infrequently observed. Seddon also noted this same thing and refers to it as

"a peculiarity of agglutination." Hewlett mentions it in connection with *Mic. melitensis* (according to Evans, this organism should be called *Bact. melitensis*). No explanation was offered by Seddon for this phenomenon, nor are we able to make one. We do know, however, that the number of these very confusing tests has been greatly reduced by employing less test fluid and using smaller amounts of serum in higher concentration. In the beginning of this work we employed 3 c.c. of test fluid and added the requisite amounts of serum from a basic dilution of 1-40. This was essentially the technic used in the agglutination test for glanders. The results of the agglutination test here reported were obtained by using 1 c.c. of test fluid and adding for the first three tubes undiluted serum and for the last three tubes from a basic dilution of the serum of 1-20. Using this technic, we have reduced the number of so-called "paradoxical" reactions to the minimum. It is rather significant to note that Rettger and Davis employed in their work only two dilutions, 1-50 and 1-100, and that they used 3 c.c. of test fluid. It is possible that if a higher dilution had been set that a reaction in a dilution higher than 1-100 might have been obtained, even though no agglutination was noted at 1-100.

The results here reported come from representative herds in the Northwest. Most of these are made up entirely of pure-bred animals with the exception of Herds E and F. Nearly all the animals in these herds are grades. We have endeavored in each case to secure just as accurate breeding history as possible, taking into consideration not only the act of abortion but retained placenta and sterility as well. It has been recognized for some time that the birth of an immature fetus was but one of the conditions signifying the presence of this symptom complex called "contagious abortion." Too many people still cling to the idea that abortions must occur in large numbers in a herd before the contagiousness of the disease is recognized and proper measures taken to suppress it.

Many animals abort in the early stages of pregnancy and pass unnoticed. The animals miss one or more diœstral periods and then appear in heat again. A negative history of abortion, especially in herds which are badly affected, must be considered with some doubt, providing these animals have been served several times at irregular intervals.

Metritis, salpingitis and cystic ovaries of cattle are often considered to be due primarily to an infection with *Bact. abortus*,

Bang. These conditions, as well as retained placenta, ought to be taken into consideration when judging whether an animal is infected with abortion disease. We have had some cases, however, that lead us to believe that other organisms besides *Bact. abortus* may be responsible for secondary infections and do even more harm than the abortion germ itself. To illustrate this, a single case will be cited. Cow No. 89, Herd H, calved at full time. The uterine contractions were weak and traction was necessary to aid in the expulsion of the fetus. The calf, a heifer, was very weak and covered with the so-called "abortion exudate." Cultures carefully made from this material and from the amniotic fluid, after several days' incubation, gave pure growths of a micrococcus. The placenta was retained and had to be removed. The calf lived. It will be noticed from the tables that the agglutination test showed that the dam reacted with 0.001 c.c. (1-1000) and the calf with 0.01 c.c. (1-100). This would indicate that the mother had been infected with *Bact. abortus*. From the cultures, however, it would seem as if the micrococcus was responsible for the retained placenta and uterine inertia. It is possible that this secondary invasion is responsible for some of the disasters of abortion disease and would also explain some of the apparent discrepancies reported in the tables. In certain other analagous cases, also, the colon organism and rarely a streptococcus has been isolated when the primary cause was undoubtedly *Bact. abortus*. We are not prepared as yet to state just what importance this secondary infection may play in abortion diseases, but are continuing our studies.

HERD A.

Blood drawn June 10, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05 1-20	0.02 1-50	0.01 1-100	0.005 1-200	0.002 1-500	0.001 1-1000
1	10 yrs. Never aborted. Calved regularly. Had R. P. One heifer killed because sterile	+	+	+	—	—	—
2	3 yrs. Dam is No. 1. First calf born dead at full time. Second calf aborted 6 mo. June 29, '18.....	+	+	+	SL	—	—
3	6 mos. Bull calf. Dam is No. 1.....	—	—	—	—	—	—
4	5 yrs. Never aborted. Living calf November, '18	+	+	SL	—	—	—
5	4 yrs. Had three calves. Last one dead but at full term.....	+	+	+	+	+	+
6	11 yrs. Never aborted.....	+	+	—	—	—	—
7	4 mos. Bull calf. Dam is No. 6.....	+	—	—	—	—	—
8	6½ yrs. Never aborted. Had bull calves	+	+	+	—	—	—
9	5 mos. Bull calf. Dam is No. 8.....	+	—	—	—	—	—
10	10 yrs. Never aborted. Had 6 calves.....	—	—	—	—	—	—
11	2 mos. Heifer calf. Dam is No. 10..	—	—	—	—	—	—
12	14 mos. Heifer. Not bred. Dam is No. 10	+	SL	—	—	—	—
13	12 yrs. Never aborted.....	+	+	+	—	—	—
14	6 yrs. Never aborted.....	+	+	+	+	+	SL
15	9 yrs. Never aborted. Calved regularly	+	+	+	—	—	—
16	5 mos. Bull calf. Dam is No. 15.....	—	—	—	—	—	—
17	6 yrs. Under treatment for sterility. A new animal in the herd.....	+	+	SL	—	—	—
18	3 yrs. Had two calves. Now in calf..	+	+	+	—	—	—
19	1 yr. Heifer. Not bred. Dam is No. 18.	+	+	—	—	—	—
20	2 mos. Bull calf. Dam is No. 18.....	+	—	—	—	—	—
21	9 yrs. Calved regularly.....	+	+	+	+	SL	SL
22	3 yrs. Had one calf. Now in calf.....	+	+	+	SL	—	—
23	1 yr. Heifer. Not bred.....	+	+	SL	SL	—	—
24	1 yr. Bull. Never used for service....	+	—	—	—	—	—
25	3 mos. Heifer calf.....	—	—	—	—	—	—
26	5 yrs. Herd bull.....	+	+	+	SL	—	—
27	4 yrs. Bull. Sire of aborted calf of No. 2	+	—	—	—	—	—
28	8 mos. Heifer calf. Dam aborted her first calf	SL	SL	SL	—	—	—

HERD B.

Blood drawn June 20, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	8 yrs. Always calved normally. Last Dec. 20, '17.....	+	SL	SL	—	—	—
2	6 mos. Heifer calf. Dam is No. 1.....	+	+	—	—	—	—
3	8 yrs. Imported. Never aborted. Calved Aug., '17. Now in calf.....	+	+	—	—	—	—
4	10 mos. Heifer. Dam is No. 3.....	+	+	+	+	—	—
5	3 yrs. Had two calves. Not bred. Never aborted.....	+	+	+	+	+	+
6	3 mos. Heifer calf. Dam is No. 5.....	SL	—	—	—	—	—
7	8 yrs. Never aborted. Calved January 10, '18.....	+	+	—	—	—	—
8	5 mos. Bull calf. Dam is No. 7.....	SL	SL	SL	SL	SL	SL
9	3 yrs. R. P. with first. Due to calve in October. Dam is No. 7.....	+	+	SL	—	—	—
10	8 yrs. Never aborted. Calved in Mar.	+	+	+	+	—	—
11	3 mos. Heifer calf. Dam is No. 10.....	+	+	+	+	—	—
12	6 yrs. Never aborted. R. P. with twins in April.....	+	+	+	+	+	+
13	3 mos. Bull calf, twin. Dam is No. 12.	—	—	—	—	—	—
14	3 mos. Heifer calf, twin. Dam is No. 12.....	—	—	—	—	—	—
15	13 mos. Heifer. Not bred. Dam is No. 12.....	+	+	+	—	—	—
16	4 yrs. Calved in March, '18. Seven months calf in '17.....	+	+	+	+	SL	—
17	1½ yrs. Heifer. Dam is No. 16.....	+	—	—	—	—	—
18	3 mos. Bull calf. Dam is No. 16.....	—	—	—	—	—	—
19	6 yrs. Never aborted. Difficult to get with calf. Calved in Feb., '18.....	+	+	—	—	—	—
20	4 mos. Heifer calf. Dam is No. 19.....	+	SL	—	—	—	—
21	5 yrs. Three normal calves. Now in calf.....	+	+	+	+	+	+
22	6 mos. Heifer calf. Dam is No. 21....	—	—	—	—	—	—
23	3½ yrs. Never aborted. Calved in April, '18.....	+	+	SL	—	—	—
24	2 mos. Heifer calf. Dam is No. 23....	—	—	—	—	—	—
25	1½ yrs. Heifer. Not bred. Dam is No. 23.....	+	+	+	—	—	—
26	8 yrs. Aborted in '15, '16 and '17....	+	+	+	+	+	+
27	2 yrs. Calved in Feb., '18.....	+	+	+	+	—	—
28	4 mos. Bull calf. Dam is No. 27.....	SL	—	—	—	—	—
29	1 mo. Bull calf.....	SL	SL	—	—	—	—
30	14 mos. Heifer. Same dam as No. 29.	SL	—	—	—	—	—
31	2 yrs. Heifer. Due to calve Aug., '18.	+	—	—	—	—	—
32	2½ yrs. Calved Oct., '17.....	+	+	—	—	—	—
33	4 yrs. Calved June, '18. No abortions.	+	+	+	+	+	+
34	6 yrs. Calved Oct., '17. No abortions.	+	+	+	+	+	+
35	6 yrs. Calved Oct., '17. No abortions.	+	SL	—	—	—	—
36	1 yr. Heifer. Not bred.....	SL	—	—	—	—	—
37	4 yrs. Herd bull.....	+	+	+	+	+	—
38	1 yr. Heifer.....	+	+	—	—	—	—
39	9 yrs. Aborted May, '18.....	+	SL	SL	—	—	—

HERD C.

Blood drawn December 30, 1917.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	12 yrs. Never aborted. Nine live calves.....	+	SL	SL	—	—	—
2	10 yrs. Never aborted. Dam is No. 1.	—	—	—	—	—	—
3	8 yrs. Never aborted. Dam is No. 1.	—	—	—	—	—	—
4	5 yrs. Never aborted. Now in calf. Dam is No. 1.....	+	+	+	+	+	+
5	3½ yrs. Never aborted. Dam is No. 1	+	—	—	—	—	—
6	6 yrs. Never aborted. Dam is No. 1..	+	—	—	—	—	—
7	1½ yrs. Bull. Used for service.....	—	—	—	—	—	—
8	5 yrs. Never aborted. Dam is No. 2..	—	—	—	—	—	—
9	7 yrs. Aborted 1913. Live calves ever since.....	—	—	—	—	—	—
10	8 yrs. Never aborted. Breeds poorly.	—	—	—	—	—	—
11	4 yrs. Never aborted. Breeds poorly.	+	+	+	+	+	+
12	2 yrs. Not bred. Dam is No. 11.....	—	—	—	—	—	—
13	6 yrs. Never aborted.....	+	+	SL	SL	—	—
14	3 yrs. One normal calf.....	—	—	—	—	—	—
15	3½ yrs. Never aborted.....	+	—	—	—	—	—
16	8 yrs. Never aborted.....	+	—	—	—	—	—
17	7 yrs. Aborted '15. R. P. Calved normally '16, '17 and '18.....	+	+	+	+	+	+
18	4 yrs. Never aborted.....	—	—	—	—	—	—
19	10 yrs. Never aborted.....	SL	SL	—	—	—	—
20	4 yrs. Never aborted. Dam is No. 19.	+	+	+	+	+	+
21	3 yrs. One normal calf.....	+	+	+	+	+	+
22	6 yrs. One normal calf. Never aborted.....	—	—	—	—	—	—
23	3 yrs. One calf. Dam is No. 22.....	—	—	—	—	—	—
24	7 yrs. Last calf aborted '14. Bred several times. Due to calve now.....	—	—	—	—	—	—
25	2 yrs. Now in calf.....	SL	—	—	—	—	—
26	2 yrs. Bred several times. Now in calf. Dam is No. 8.....	SL	SL	SL	—	—	—
27	2 yrs. Now in calf.....	—	—	—	—	—	—
28	4 yrs. Calved '16. Now in calf.....	—	—	—	—	—	—
29	6¾ yrs. Never aborted.....	—	—	—	—	—	—
30	2 yrs. Not bred.....	SL	—	—	—	—	—
31	1¼ yrs. Not bred.....	+	—	—	—	—	—
32	11 mos. Not bred.....	SL	—	—	—	—	—
33	9 mos. Not bred.....	—	—	—	—	—	—
34	11 mos. Not bred.....	—	—	—	—	—	—
35	1 yr. Not bred.....	+	+	SL	—	—	—

HERD D.

Blood drawn December 31, 1917.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05 1-20	0.02 1-50	0.01 1-100	0.005 1-200	0.002 1-500	0.001 1-1000
1	4 yrs. Aborted. Live calf '17. Now in calf.	+	+	+	+	—	—
2	8 yrs. Aborted '11. R. P. Four normal calves since. Last calf July, '17....	+	+	+	+	+	+
3	4 yrs. Aborted '15. Calved '17. Now in calf.	+	+	+	+	+	+
4	5 yrs. R. P. Two calves. Never aborted.	—	—	—	—	—	—
5	10 yrs. Aborted '13, '16. Live calf '17. Now in calf.	—	—	—	—	—	—
6	5 yrs. Aborted '14. R. P. Metritis '16. Last calf Oct., '17.	+	—	—	—	—	—
7	9 yrs. Aborted '11, '12, '14. R. P. Calved Feb., '17. Now in calf.	+	+	+	+	—	—
8	5 yrs. Had calves '16, '17. Aborted March, '18.	+	+	+	+	+	+
9	5 yrs. Never aborted. Three live calves. R. P. Now in calf.	—	—	—	—	—	—
10	11 yrs. Probably never aborted. Bred seven times for last pregnancy.	+	—	—	—	—	—
11	7 yrs. Aborted '15. R. P. '17. Now in calf.	+	+	+	—	—	—
12	6 yrs. First calf '14 dead. R. P. Metritis. July '17 last calf.	+	+	+	—	—	—
13	7 yrs. Aborted '13. Calved '15. Bred 14 times. Now in calf.	+	+	+	+	SL	—
14	5½ yrs. Aborted '14. '15. Calved '16, '17. Cystic ovaries.	+	+	+	—	—	—
15	6½ yrs. Never aborted. Five calves.	—	—	—	—	—	—
16	5¾ yrs. Aborted. Now in calf.	+	+	+	—	—	—
17	6 yrs. Aborted '13. Calved '15, '17. Metritis.	+	+	+	+	+	SL
18	6 yrs. Aborted '13. Calved '15, '17. R. P.	+	+	+	+	—	—
19	4 yrs. Aborted '16. Calved at 8 mos., '17.	+	+	+	+	+	—
20	2 yrs. Calved Nov., '17.	+	—	—	+	+	—
21	9 yrs. Aborted '11. Calved '13. Aborted '15 and '18.	+	+	+	+	+	+
22	4¾ yrs. Calved '15 and '17. Now in calf.	+	+	+	+	+	+
23	5 yrs. Calved '14. Aborted '17. Now in calf.	+	+	SL	—	—	—
24	5½ yrs. Never aborted. Last calf in March, '17. Now in calf.	+	+	+	+	+	—
25	5½ yrs. Not aborted. Calved '17, '18.	+	+	+	+	SL	—
26	5½ yrs. Aborted '14. Bred 8 times. Calved '16, '17.	+	+	+	—	—	—
27	5 yrs. Aborted Feb., '17. Calved Dec., '17.	—	—	—	—	—	—
28	6 yrs. Aborted '13. Next calves Nov., '16, and Dec., '17.	+	+	+	+	+	+
29	7 yrs. Positive blood test '12. Five calves. Now in calf.	+	—	—	—	—	—
30	1½ yrs. Heifer. Not bred.	+	+	+	—	—	—
31	1½ yrs. Heifer. Not bred.	+	+	—	—	—	—
32	2 yrs. Heifer. Now in calf.	+	+	—	—	—	—
33	1½ yrs. Heifer. Not bred.	—	—	—	—	—	—
34	2 yrs. Heifer. Now in calf.	SL	SL	—	—	—	—
35	1½ yrs. Heifer. Now in calf.	SL	—	—	—	—	—
36	4 yrs. One calf. Metritis.	+	—	—	—	—	—
37	3½ yrs. Herd bull.	+	+	—	—	—	—
38	2 yrs. Heifer. Now in calf.	+	+	—	—	—	—
39	1½ yrs. Herd bull.	+	+	—	—	—	—
40	2 yrs. Heifer. Not bred.	+	—	—	—	—	—
41	2 yrs. Heifer. Not bred.	—	—	—	—	—	—

HERD E.

Blood drawn July 16, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	Aged cow. Never aborted. Now with calf. Last calf April, '18.....	+	+	—	—	—	—
2	1 yr. Heifer. Dam is No. 1.....	+	+	—	—	—	—
3	2 yrs. Heifer. Now with calf. Dam is No. 1.....	+	+	+	+	+	+
4	2 mo. Heifer calf. Dam is No. 1.....	+	+	—	—	—	—
5	Aged cow. Never aborted. Last calf May, '18.....	+	+	+	—	—	—
6	2 mo. Bull calf. Dam is No. 5.....	+	+	—	—	—	—
7	Aged cow. Never aborted. Now with calf. Last calf Jan., '18.....	+	+	+	—	—	—
8	6 mo. Heifer calf. Dam is No. 7.....	+	—	—	—	—	—
9	Aged cow. Aborted June, '12. Now with calf. Last calf Dec., '17.....	+	+	+	+	+	SL
10	1½ yrs. Heifer. Dam is No. 9.....	+	+	+	+	—	—
11	1½ yrs. Heifer. Now with calf. Dam is No. 9.....	+	+	+	+	—	—
12	Aged cow. Never aborted. Now with calf. Last calf Dec., '17.....	+	+	+	—	—	—
13	6 mo. Bull calf. Dam is No. 12.....	+	—	—	—	—	—
14	7 mo. Bull calf.....	SL	—	—	—	—	—
15	Aged cow. Never aborted. Now with calf. Last calf Dec., '17.....	+	+	+	+	+	—
16	7 mo. Heifer. Dam is No. 15.....	SL	—	—	—	—	—
17	1½ yrs. Heifer. Dam is No. 15.....	+	+	+	+	+	—
18	Aged cow. Never aborted. Now with calf. Last calf Dec., '17.....	+	+	SL	—	—	—
19	Bull calf. 2 mo. Dam is No. 18.....	—	—	—	—	—	—
20	Aged cow. Never aborted. Now with calf. Last calf May, '18.....	+	+	+	+	—	—
21	15 mo. Bull calf. Dam is No. 20.....	+	+	+	SL	—	—
22	2 mo. Bull calf. Dam is No. 20.....	SL	SL	—	—	—	—
23	Aged cow. Never aborted. Last calf June, '18.....	+	+	+	—	—	—
24	2 wks. Bull calf. Dam is No. 23.....	—	—	—	—	—	—
25	Aged cow. Never aborted. Last calf July, '18.....	+	+	+	+	+	+
26	Heifer calf. 2 wks. Dam is No. 25.....	+	—	—	—	—	—
27	1 yr. Heifer. Dam is No. 25.....	+	SL	—	—	—	—
28	Aged cow. Aborted April, '18. R. P. Last calf Sept., '17.....	+	+	+	+	+	+
29	2 yrs. Heifer. Dam is No. 28.....	+	+	+	+	—	—
30	2 yrs. Heifer. Not bred.....	+	+	+	+	—	—
31	Aged cow. Never aborted. Now with calf. Last calf May, '18.....	+	+	+	SL	—	—
32	3 mos. Bull calf. Dam is No. 31.....	—	—	—	—	—	—
33	Aged cow. Aborted Jan., '18. Now with calf. Last calf Feb., '17.....	+	+	+	+	+	—
34	1½ yrs. Heifer. Dam is No. 33.....	+	+	—	—	—	—
35	Aged cow. Never aborted. Now with calf. Last calf May, '18.....	+	+	+	+	—	—
36	2 mos. Heifer calf. Dam is No. 35....	+	+	+	+	+	+
37	Steer. 2 yrs.....	+	+	+	+	+	+
38	Aged cow. Never aborted. Now with calf. Last calf Feb., '17.....	+	+	+	+	+	—
39	1½ yrs. Heifer. Dam is No. 38.....	+	—	—	—	—	—
40	Aged cow. Never aborted. Last calf Dec., '17.....	+	+	+	+	+	+
41	1½ yrs. Heifer. Dam is No. 40.....	—	—	—	—	—	—
42	Aged cow. Never aborted. Last calf July, '18.....	+	—	—	—	—	—
43	15 mos. Heifer. Dam is No. 42.....	+	SL	—	—	—	—
44	Aged cow. Never aborted. Now with calf. Last calf Oct., '17.....	+	+	+	SL	—	—

HERD E—Continued.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
45	1¾ yrs. Heifer. Dam is No. 44.....	SL	—	—	—	—	—
46	9 mos. Heifer.....	+	+	—	—	—	—
47	Aged cow. Never aborted. Now with calf. Last calf Sept., '17.....	+	SL	—	—	—	—
48	2 yrs., 9 mos. Heifer. Now with calf. Dam is No. 47.....	+	+	+	—	—	—
49	Aged cow. Never aborted. Hard to get with calf.....	+	+	+	+	+	+
50	1½ yrs. Heifer. Now with calf.....	+	+	+	+	+	+
51	3 yrs. Heifer. Now with calf.....	+	+	+	+	+	+
52	3 yrs. Now with calf. Never calved..	+	+	+	+	—	—
53	Aged cow. Now with calf. Last calf Oct., '17.....	+	+	+	+	—	—
54	1½ yrs. Heifer. Dam is No. 53.....	—	—	—	—	—	—
55	2½ yrs. Heifer. Now with calf. Dam is No. 53.....	+	+	+	SL	SL	—
56	Aged cow. Aborted Feb., '18. Now with calf. Last calf May, '17.....	+	+	+	SL	—	—
57	Aged cow. Never aborted. Now with calf. Last calf Jan., '18.....	+	+	+	+	+	+
58	Aged cow. Never aborted. Now with calf. Last calf Sept., '17.....	+	+	+	+	+	+
59	Bull calf. 8 mos.....	+	+	SL	—	—	—
60	Aged cow. Aborted May, '18. R. P. Last calf Aug., '17.....	+	+	+	+	+	+
61	Heifer. 3 yrs. Now with calf.....	+	+	+	+	+	+
62	3 yrs. Aborted May, '18. R. P. Now with calf. Never calved.....	+	+	+	+	+	+
63	Aged cow. Never aborted. Now with calf. Last calf Aug., '17.....	+	+	+	+	+	+
64	Aged cow. Aborted March, '17. R. P. Now with calf. Last calf April, '18..	+	+	+	SL	—	—
65	Aged cow. Never aborted. Now with calf. Last calf Nov., '17.....	+	+	+	—	—	—
66	1½ yrs. Heifer. Dam is No. 65.....	+	+	+	—	—	—
67	4 yrs. Herd bull.....	+	+	—	—	—	—
68	Aged cow. Never aborted. Last calf Oct., '17.....	+	+	—	—	—	—
69	Aged cow. Aborted Oct., '16. and Sept., '17. R. P. Now with calf.....	+	+	+	+	+	+
70	2½ yrs. Heifer. Now with calf.....	+	+	+	—	—	—
71	Aged cow. Never aborted. Last calf April, '18.....	+	+	+	SL	—	—
72	Aged cow. Never aborted. Now with calf. Last calf June, '17.....	+	+	+	—	—	—
73	Aged cow. Never aborted. Now with calf. Last calf Sept., '17.....	+	+	SL	SL	—	—
74	Aged cow. Aborted Sept., '17. R. P. Last calf Jan., '17.....	+	+	+	—	—	—
75	Aged cow. Never aborted. Now with calf. Last calf Jan., '18.....	+	+	SL	SL	—	—
76	2½ yrs. Heifer. Now with calf.....	+	+	+	—	—	—
77	Aged cow. Aborted Oct., '16. R. P. Now with calf. Last calf Jan., '18..	+	+	+	SL	—	—
78	Aged cow. Never aborted. Now with calf. Last calf Oct., '17.....	SL	—	—	—	—	—
79	Aged cow. Never aborted. Now with calf. Last calf Jan., '17.....	+	+	+	SL	—	—
80	Aged cow. Never aborted. Now with calf. Last calf May, '17.....	+	+	+	+	—	—
81	Aged cow. Never aborted. Now with calf. Last calf Aug., '17.....	+	+	+	+	+	+

HERD F.

Blood drawn June 27, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	5 mos. Heifer.....	SL	—	—	—	—	—
2	4 mos. Heifer.....	+	SL	—	—	—	—
3	8 mos. Heifer.....	+	—	—	—	—	—
4	8 mos. Heifer.....	—	—	—	—	—	—
5	4 mos. Heifer.....	—	—	—	—	—	—
6	5 mos. Heifer.....	+	—	—	—	—	—
7	5 mos. Heifer.....	SL	—	—	—	—	—
8	4 mos. Heifer.....	—	—	—	—	—	—
9	6 mos. Heifer.....	—	—	—	—	—	—
10	6 mos. Heifer.....	SL	SL	—	—	—	—
11	5 mos. Heifer.....	+	—	—	—	—	—
12	6 mos. Heifer.....	+	SL	—	—	—	—
13	6 mos. Heifer.....	SL	SL	—	—	—	—
14	7 yrs. Never aborted.....	+	+	SL	—	—	—
15	2 days. Bull calf. Dam is No. 14.....	—	—	—	—	—	—
16	3½ yrs. One calf. Never aborted....	+	+	—	—	—	—

HERD G.

Blood drawn July 22, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	6 yrs. Sterile for 1½ yrs. Never aborted.....	+	+	SL	—	—	—
2	6 mos. Heifer calf. Dam is No. 1.....	+	SL	—	—	—	—
3	2 yrs. One calf. Dam is No. 1.....	+	+	+	—	—	—
4	6 mos. Bull calf. Dam is No. 3.....	+	+	+	+	—	—
5	8 yrs. Four calves. Never aborted....	+	+	SL	—	—	—
6	3 yrs. One calf. Dam is No. 5.....	+	+	+	—	—	—
7	7 yrs. Aborted '13. Four live calves..	+	+	+	+	+	+
8	2 yrs. One calf. Dam is No. 7.....	+	+	+	+	+	—
9	7 mos. Heifer. Dam is No. 8.....	+	SL	—	—	—	—
10	6 yrs. Aborted first calf. Three calves	+	+	+	SL	—	—
11	1½ yrs. Heifer. Not bred.....	+	+	SL	—	—	—
12	3 yrs. First calf died of scours. Not in calf.....	+	+	+	—	—	—
13	6 yrs. Four calves. Never aborted....	+	+	+	—	—	—
14	5 mos. Heifer calf. Dam is No. 13.....	+	—	—	—	—	—
15	1 yr. Heifer. Not bred. Dam is No. 13	+	—	—	—	—	—
16	3 yrs. One calf. Now in calf.....	+	+	+	SL	—	—
17	4 mos. Heifer calf. Dam is No. 16....	SL	SL	—	—	—	—
18	9 yrs. Six calves. Never aborted....	+	+	SL	—	—	—
19	1½ yrs. Heifer twin. Dam is No. 18.	SL	SL	SL	—	—	—
20	1½ yrs. Heifer twin. Dam is No. 18.	+	+	SL	—	—	—
21	2 yrs. One calf.....	+	SL	—	—	—	—
22	3 mos. Heifer calf. Dam is No. 21....	+	+	+	—	—	—
23	11 yrs. Seven calves.....	+	+	+	—	—	—
24	3 yrs. One calf. Dam is No. 23.....	+	+	SL	—	—	—
25	4 mos. Heifer calf. Dam is No. 24....	+	+	+	—	—	—
26	1½ yrs. Heifer. Dam is No. 23.....	+	+	+	+	—	—
27	6 yrs. Three calves. Never aborted....	+	+	+	—	—	—
28	3 yrs. Two calves. Never aborted....	+	SL	SL	—	—	—
29	3 mos. Heifer calf. Dam is No. 28....	SL	—	—	—	—	—
30	3 yrs. One calf.....	+	+	+	—	—	—
31	1 yr. Heifer. Dam is No. 30.....	+	SL	—	—	—	—
32	3 yrs. Two calves. R. P.....	+	SL	—	—	—	—
33	1½ yrs. Aborted first calf.....	+	SL	—	—	—	—
34	1½ yrs. Now in calf.....	—	—	—	—	—	—
35	1½ yrs. Heifer, a twin and a "free martin".....	+	SL	—	—	—	—
36	4 mos. Heifer calf.....	—	—	—	—	—	—

HERD H.

Blood drawn during May, June and July, 1918.

Animal No.	HISTORY	Results of the Agglutination Test					
		0.05	0.02	0.01	0.005	0.002	0.001
		1-20	1-50	1-100	1-200	1-500	1-1000
1	1 1/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
2	1 yr. Heifer. Not bred.....	—	—	—	—	—	—
3	8 mos. Heifer. Not bred.....	—	—	—	—	—	—
4	1 3/4 yrs. Heifer. Not bred.....	+	SL	—	—	—	—
5	1 1/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
6	1 1/2 yrs. Heifer. Not bred.....	+	+	+	—	—	—
7	1 3/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
8	1 3/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
9	1 3/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
10	1 3/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
11	8 mos. Heifer. Not bred.....	—	—	—	—	—	—
12	1 3/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
13	11 mos. Heifer. Not bred.....	—	—	—	—	—	—
14	10 mos. Heifer. Not bred.....	—	—	—	—	—	—
15	1 yr. Heifer. Not bred.....	—	—	—	—	—	—
16	1 yr. Heifer. Not bred.....	—	—	—	—	—	—
17	1 yr. Heifer. Not bred.....	—	—	—	—	—	—
18	1 yr. Heifer. Not bred.....	—	—	—	—	—	—
19	1 1/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
20	1 1/4 yrs. Heifer. Not bred.....	—	—	—	—	—	—
21	13 yrs. Never aborted.....	—	+	—	—	—	—
22	8 yrs. Two calves. Sterile.....	+	+	—	—	—	—
23	14 yrs. Aborted '15. Last calf '18....	+	SL	—	—	—	—
24	7 yrs. Dystocia first calf.....	+	+	+	—	—	—
25	8 yrs. Dead calf '14. Live calf '15, '16 and '18.....	+	+	+	+	+	SL
26	5 mos. Bull. Dam, is No. 25.....	+	+	—	—	—	—
27	5 yrs. Aborted '15. Had heifer calf '15. R. P., '17.....	+	+	+	+	+	+
28	7 yrs. Aborted '16. Sterile '17. Now in calf.....	+	+	+	—	—	—
29	3 yrs. Aborted first calf Feb., '18. Dam is No. 28.....	+	+	+	+	+	+
30	9 yrs. Never aborted.....	+	SL	—	—	—	—
31	9 yrs. Never aborted.....	—	—	—	—	—	—
32	3 yrs. First calf Feb., '18. Dam is No. 31.....	+	+	+	+	+	+
33	20 days. Heifer calf. Dam is No. 32....	+	+	+	+	+	+
34	5 yrs. Aborted '16. Calved '17, '18....	+	+	+	—	—	—
35	5 mos. Bull calf. Dam is No. 34.....	+	—	—	—	—	—
36	9 yrs. Never aborted.....	—	—	—	—	—	—
37	2 mos. Bull calf. Dam is No. 36.....	—	—	—	—	—	—
38	3 yrs. Calved Dec., '17. Afterwards hydrosalpinx. Sterile.....	—	—	—	—	—	—
39	6 mos. Bull calf. Dam is No. 38.....	+	+	—	—	—	—
40	3 yrs. Calved Feb., '18. Bred many times since.....	—	—	—	—	—	—
41	5 days. Heifer calf. Dam is No. 40....	+	+	+	SL	—	—
42	3 yrs. Now with calf.....	+	+	+	+	+	+
43	3 yrs. Aborted '16. Not bred.....	+	+	+	+	+	+
44	8 yrs. Aborted '17. Always live calves before.....	+	+	—	—	—	—
45	3 yrs. "Free martin." Dam is No. 44....	+	+	+	+	—	—
46	6 yrs. Aborted '16. Calved '17. Now in calf.....	+	+	SL	—	—	—
47	3 yrs. First calf died. Dam is No. 46....	+	+	—	—	—	—
48	10 yrs. Never aborted.....	—	—	—	—	—	—
49	4 yrs. Two live calves.....	+	+	+	SL	—	—
50	8 mos. Heifer. Dam is No. 49.....	—	—	—	—	—	—
51	5 yrs. Two calves.....	+	+	+	+	+	+
52	8 yrs. Never aborted.....	+	+	+	+	—	—
53	5 yrs. Two calves.....	+	+	+	+	—	—
54	9 yrs. Never aborted.....	+	+	+	+	—	—
55	9 yrs. R. P. '17. Bred six times.....	+	SL	—	—	—	—
56	7 yrs. R. P. Shy breeder. Three calves.	+	—	—	—	—	—
57	3 mos. Heifer calf. Dam is No. 56....	—	—	—	—	—	—
58	6 yrs. Four calves. Never aborted....	+	+	+	+	SL	—
59	4 mos. Heifer calf. Dam is No. 58....	—	—	—	—	—	—

HERD H—Continued.

Animal No.	HISTORY	Results of the Agglutination Test					
		0.05 1-20	0.02 1-50	0.01 1-100	0.005 1-200	0.002 1-500	0.001 1-1000
		—	—	—	—	—	—
60	8 mos. Heifer.....	—	—	—	—	—	—
61	5 yrs. Three calves. Never aborted..	+	+	+	+	+	+
62	3 yrs. Heifer. Malformed genitals. Killed.....	—	—	—	—	—	—
63	3 yrs. One calf. Now with calf.....	+	+	—	—	—	—
64	5 yrs. Three calves. Never aborted..	—	—	—	—	—	—
65	5 yrs. First calf dead. Two calves. Now with calf.....	+	+	+	SL	—	—
66	8 yrs. Never aborted. Last calf April, '18.....	+	+	—	—	—	—
67	1 day. Heifer calf. Dam is No. 66....	+	+	+	+	+	+
68	5 yrs. Two calves. Dam is No. 66....	+	+	+	—	+	+
69	2 mos. Heifer calf. Dam is No. 68....	+	+	+	—	—	—
70	4 yrs. One calf. Now with calf. Dam is No. 66.....	+	+	+	—	—	—
71	2 mos. Heifer calf. Dam is No. 70....	SL	+	+	—	—	—
72	3 yrs. Aborted '17. Dam is No. 66....	+	+	+	+	+	+
73	6 mos. Bull calf. Dam is No. 72.....	+	+	+	—	—	—
74	5 yrs. Two calves. Never aborted....	+	+	+	—	—	—
75	9 yrs. R. P. '18. Never aborted.....	+	SL	—	—	—	—
76	5 mos. Bull calf. Dam is No. 75.....	+	+	—	—	—	—
77	5 yrs. Never aborted.....	+	+	+	—	—	—
78	2 yrs. Now with calf. Dam is No. 77..	+	+	+	—	—	—
79	4 yrs. One calf. Bred seven times. Dam is No. 75.....	+	+	SL	—	—	—
80	2 mos. Heifer calf.....	—	—	—	—	—	—
81	6 yrs. Five calves.....	—	—	—	—	—	—
82	3 mos. Heifer calf. Dam is No. 81....	—	—	—	—	—	—
83	8 yrs. R. P. Never aborted.....	+	+	+	—	—	—
84	5 mos. Bull calf. Dam is No. 83.....	+	+	+	+	SL	—
85	11 yrs. Has been sterile.....	+	+	—	—	—	—
86	7 mos. Bull calf. Dam is No. 85.....	SL	SL	—	—	—	—
87	4 yrs. Two calves. Dam is No. 85....	+	+	+	—	—	—
88	5 mos. Bull calf. Dam is No. 87.....	+	+	+	—	—	—
89	10 yrs. Had calf with abortion exu- date in '18.....	+	+	+	+	+	+
90	1 day. Heifer calf. Dam is No. 89....	+	+	—	—	—	—
91	4 yrs. One calf. Dam is No. 89.....	+	+	—	—	—	—
92	4 mos. Heifer calf. Dam is No. 91....	—	—	—	—	—	—
93	4 yrs. One calf.....	+	—	—	—	—	—
94	12 yrs. Last calf Feb., '17. Metritis..	+	+	+	+	+	+
95	4 yrs. One calf. Dam is No. 94.....	—	—	—	—	—	—
96	9 mos. Bull calf. Dam is No. 95.....	+	+	SL	—	—	—
97	7 yrs. Five calves. R. P. in '14.....	+	—	—	—	—	—
98	2 weeks. Heifer calf. Dam is No. 97..	—	—	—	—	—	—
99	8 yrs. Aborted '13. No trouble since..	SL	—	—	—	—	—
100	3 yrs. Aborted first calf.....	+	+	+	+	+	+
101	4 mos. Heifer calf.....	+	+	—	—	—	—
102	9 yrs. Calved regularly.....	+	+	+	—	—	—
103	1 day. Heifer calf. Dam is No. 102....	+	—	—	—	—	—
104	3 yrs. Now in calf. Dam aborted three times.....	+	+	+	—	—	—
105	2 yrs. Calved '18.....	+	—	—	—	—	—
106	1 mo. Bull calf. Dam is No. 105.....	+	—	—	—	—	—
107	9 yrs. Aborted '13 and '15. R. P. Three living calves.....	+	+	+	+	+	—
108	4 mo. Bull calf.....	—	—	—	—	—	—
109	6 yrs. Has been sterile.....	+	+	+	SL	—	—
110	8 yrs. Troubled with sterility since 1915.....	SL	—	—	—	—	—
111	4 yrs. Herd bull.....	+	+	—	—	—	—
112	3 yrs. Herd bull.....	+	+	SL	—	—	—
113	5 yrs. Herd bull.....	+	+	—	—	—	—
114	2 yrs. Herd bull.....	+	+	—	—	—	—
115	1 yr. Herd bull.....	+	+	SL	—	—	—
116	4 yrs. Herd bull.....	—	—	—	—	—	—
117	1 yr. Herd bull.....	+	+	+	SL	—	—

HERD I.

Blood drawn July 26, 1918.

Animal No.	HISTORY	Results of Agglutination Test					
		0.05 1-20	0.02 1-50	0.01 1-100	0.005 1-200	0.002 1-500	0.001 1-1000
1	2 yrs. Heifer. Just aborted first calf.						
2	R. P.	+	+	+			
3	6 mos. Bull calf.	+	SL	SL			
4	3½ yrs. Never aborted.	+	SL				
5	7 mos. Bull calf. Dam is No. 3.	+	SL				
6	8 mos. Bull calf.	+	SL				
7	6 mos. Bull calf.	+	SL				
8	7 mos. Bull calf.	+	SL				
9	8 mos. Bull calf.	+	SL				
10	8 mos. Bull calf.	+	SL				
11	2 mos. Bull calf.	+					
12	6½ yrs. Never aborted.	+					
13	3 mos. Bull calf. Dam is No. 11.	+	+	SL			
14	3 mos. Bull calf.	+					
15	3½ yrs. R. P. '17.	+	SL				
16	2 mos. Bull calf. Dam is No. 14.	+	+				
17	3½ yrs. Never aborted.	+					
18	2 mos. Heifer calf. Dam is No. 16.	SL					
19	2 mos. Heifer calf.	+					
20	5½ yrs. R. P. '17.	+	SL	SL			
21	2 mos. Heifer calf. Dam is No. 19.	+	SL				
22	2 mos. Heifer calf.	+	+				
23	2 mos. Heifer calf.	+					
24	3¾ yrs. Heifer. Never aborted.	SL					
25	2 mos. Heifer calf. Dam is No. 23.	+	+	SL			
26	2 mos. Heifer calf.	+	SL				
27	4½ yrs. Never aborted.	+	+	+			
28	2 mos. Heifer calf. Dam is No. 26.	+	+	+			
29	3 mos. Heifer calf.	SL					
30	2 mos. Heifer calf.	+	+	SL			
31	2 mos. Heifer calf.	+	+	+	+		
32	2 mos. Heifer calf.	+	+				
33	1½ yrs. Has aborted.						
34	14 yrs. Never aborted.	+	+				
35	12½ yrs. Never aborted.	+	+	SL	SL		
36	4½ yrs. Non-breeder. One calf.	SL					
37	3¼ yrs. One calf. Aborted '18.	+	+	+			
38	3½ yrs. Never aborted.	+					
39	13½ yrs. Never aborted.	+	+				
40	3 yrs. Never aborted.	SL	SL				
41	4½ yrs. Never aborted.	SL					
42	4½ yrs. Never aborted.	+	+	+	+	+	+
43	4½ yrs. Never aborted.	+	+	+			
44	5½ yrs.	SL	SL	+			
45	8½ yrs. Never aborted.	+	+	+	+	+	+
46	8½ yrs. Never aborted.	SL	SL	SL			
47	13½ yrs. Non-breeder.	+	+	+			
48	9½ yrs. Had dead twins.	+	+	+	+	+	+
49	A new cow in the herd.	+	+	+	+	+	+
50	4½ yrs. Never aborted.	+	+	+	SL		
51	4½ yrs. Never aborted.	+	+				
52	3¼ yrs. History unknown.	+					
53	4½ yrs. Never aborted.	SL					
54	3¾ yrs. Never aborted.	SL					
55	4¾ yrs. Never aborted.	+					
56	4½ yrs. Dropped six weeks calf.	SL					
57	5½ yrs. R. P. '17.	+	SL				
58	2¾ yrs. Never aborted.	+	SL				
59	2¾ yrs. One calf.	+	+	+			
60	2¾ yrs. One live calf.	+	+	SL			
61	11½ yrs. Never aborted.	+	+	+	SL		
62	2¾ yrs. History unknown.	+					

The herd tests have been given in full because they should be considered as a group. A careful study of these reactions shows several important features.

M'Fadyean in 1912 as a result of testing 535 presumably healthy cattle stated that: "One will be justified in regarding complete agglutination with a serum dilution of 1 in 50 or 1 in 100 as strong evidence of infection." Brüll considered that agglutination in a dilution of 1 to 64 was doubtful. From these results, as well as the results of other workers, it has been customary to consider a reaction in a dilution of 1-50 as very suspicious and an agglutination at 1-100 as positive evidence of infection. The results here reported would indicate that this standard was too high. Many calves, especially from 6 to 8 months of age, do not react with 0.05 c.c. (1-20 dilution). Also many cows which have not aborted and heifers do not react with this amount of serum. On the other hand, several animals with clear histories of abortions do not react above 0.02 c.c. (1-50). In the beginning of this work we used for our first tube 0.1 c.c. of serum (1-10 dilution). In many instances we found animals the blood serum of which did not agglutinate with this amount. The discoloration which this large amount of serum caused in the test fluid and the consequent difficulty of reading the tube caused us to abandon it as a routine test. It would seem as a result of these observations as if an agglutination with 0.05 c.c. serum (1-20 dilution) should be considered as an indication that the animal has been or is infected with *Bact. abortus*. The agglutinating antibodies might also be derived from the dam and the individual never harbor the germ as in the case of a very young calf.

Rettger and Davis pointed out that: "Calves give the same blood reactions at the time of birth as their dams. Whether positive or negative at the beginning of extra-uterine life, all become non-reactors by the time they are six to seven months of age. Some change from positive to negative within the first two or three months, while the greater number require a somewhat longer period." The results here reported do not bear out the first part of this statement in that calves have the same agglutination titre as their dam. Some calves do have the same agglutination reactions as the cows but others do not. From the results of our work we cannot verify Rettger and Davis's statement in this particular. In part this is explained by the fact that they employed only 1-50 and 1-100 dilutions. Our work does show, however, that animals from six to ten months of age as a rule

fail to react even though they may have given positive tests earlier in life. This agrees with Rettger and Davis's conclusions, and is a very important point to keep in mind when considering the test from the control standpoint. As had been pointed out, this period seems to be the most critical in the life of the animal and all possible precautions should be taken to guard against infection.

A comparison of the tests from the different herds shows that the total number of strongly positive reactions are much higher in herds which have large numbers of animals aborting. This is strikingly shown by a comparison of the tests of Herds D and E with those of Herds C and I. On the other hand, it will be noted that many discrepancies are shown in tests of individuals as compared with their breeding histories. A positive reaction does not signify that an animal has aborted or will abort. On the other hand, a failure to agglutinate with large amounts of serum (in low dilution) does not mean that an animal will not abort in the present or future pregnancies. The test cannot be relied on to pick out individual aborters. As was stated by Mohler and Traum, it simply indicates that the animal has been or is at present infected with *Bact. abortus*. The cow may be immune and a very valuable animal to place in one's herd.

DISCUSSION.

Several investigators have pointed out the great significance of the serological tests in the control of contagious abortion. Schroeder and Cotton state that: "To prevent the further spread of abortion disease owners of uninfected cattle should be instructed to have careful agglutination tests for abortion disease made of all cattle they propose to introduce into their herds." Rettger and Davis say that: "The serological tests are an important aid in the inauguration of preventive measures." Van Es in his discussion of abortion disease makes a very conservative statement in regard to the value of the blood tests. He says: "Those tests, thus, can only indicate that the infection is or was present, but beyond that they show nothing. In spite of this shortcoming, however, they have some practical value. When, for instance, a first abortion occurs the test applied to blood samples taken from all the animals comprising the herd may not only indicate that true abortion disease is present, but will also point out just what animals may be positively infected. The tests are valuable to show herd infection as well as the extent of its

distribution in a herd, but at no time can they be depended upon to disclose whether or not a given pregnant animal will abort. Their value therefore must not be overestimated."

The results of the work here reported show that the blood tests interpreted according to our present knowledge have a very limited value in the control of this widespread disease. The agglutination test indicates the relative amount of infection existing in different herds. In badly infected herds the number of positive reactors will be much larger than in slightly infected ones. Nearly all investigators so far agree that the test cannot be relied on to give results that will state that an animal has aborted or will abort. The test has a very limited value in indicating the infection of a calf and practically no value in indicating whether a yearling heifer will become an aborter. As has been pointed out, animals from ten months to a year of age nearly always do not agglutinate even when large amounts of serum are used.

The tests have been stated to have a particular value in indicating the presence of contagious abortion in a herd where but one or two abortions have occurred. In these cases, however, the possibility must be kept in mind that the aborting animals may fail to react soon after the act of abortion and still be infected with abortion disease. It would seem that a breeder who has one or two abortions in his herd would be much safer to consider them as infectious in character and take the proper measures to prevent the spread of the disease than to rely on results of the blood tests to indicate the presence of the disease with their possibility of giving a negative result, even though the herd was actually infected. We do not deny the possibility of accidental abortions or abortions due to drugs, etc., but we do believe that these in comparison to those due to abortion disease are very uncommon.

The results here reported indicate that the agglutination test is an unsafe basis upon which to judge the merits of individual animals as regards abortion disease. An animal may react positively which has never aborted or may never abort. On the other hand, some animals may be infected and not have the agglutinating antibodies at the time of taking the blood sample. A breeder would be far safer to buy an animal with a good breeding history, or, better, from a herd which has had little trouble with abortion disease, than to rely on the results of the agglutination test.

Further study of these tests is under way and we intend to find out in particular the agglutinating titre of the blood from beef cattle. Abortion disease is spreading rapidly to our range animals and here it is even more of a problem to control than among the dairy breeds. It is quite possible that further research will show how to interpret the results of the blood tests so that they may be applied more advantageously in controlling abortion among cattle.

CONCLUSIONS.

1. The complement fixation test seems to have no advantage over the agglutination test in the diagnosis of contagious abortion.

2. The technic of the agglutination test is simpler than that of complement fixation and the results of the agglutination test are not influenced by as many factors (conglutinine, etc.).

3. The results of the agglutination test show the relative amount of herd infection. The test cannot be relied on to pick out individual aborters.

4. The blood of calves may have the same agglutination titre as that of their dams. Many, however, react differently.

5. The agglutination test of animals from 8-10 months of age usually shows that agglutinating antibodies are not present in their blood.

6. Herd bulls often react positively to the agglutination test.

7. At present the results of the agglutination test cannot be utilized as a basis for control measures for abortion disease.

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SUGGESTIONS FOR LEGAL AND REGULATORY MEASURES AGAINST BOVINE INFEC- TIOUS ABORTION.*

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The objective goal of research into the cause and nature of communicable diseases of live stock is the establishment of a sound basis for control and eradication where possible. The recording of personal observations and experiences and the discussion of the whole matter privately or publicly have the same purpose. It is very interesting to trace the historical development of the various animal diseases or plagues that science and practice have succeeded in allocating to the various and proper spheres of activity in the fields of animal husbandry and veterinary science. There are those that the stockman, with or without veterinary approval, is considered, by himself or others, to be competent to deal with adequately; another group is quite satisfactorily dealt with by and through the local practitioner with or without the coöperation of the properly constituted live stock sanitary authorities; and there is yet another group that is so serious in its possibilities and so peculiar in its characterization that only local, state or federal or even international live stock sanitary officials, working alone or in coöperation, are competent to eradicate or attempt to control.

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It will not be necessary for me, and it is not my purpose, to even suggest examples naturally falling under the groups outlined. Each of you is able to quickly classify the infectious and other parasitic diseases in a general way so that they will fall into these three groups and the live stock sanitarian is constantly under the necessity of thus weighing the seriousness of these diseases and officially treating them accordingly. To such a degree of exactitude have live stock sanitary procedures arrived that uniformity, with periodic but slight revisions, has been attained in many instances.

Where in our suggested grouping shall we place bovine infectious abortion? Certainly the stockman, himself, has not demonstrated his ability to meet the issue successfully. A careful study of the disease, however, must convince one that much of the work of control and eradication will ultimately fall to the lot of the stockman, but only when he has been properly instructed and made to realize the seriousness of the disease and the part that he must play in the work of eradication. Many cattle owners are ready and eager for this instruction, many more are skeptical but receptive when the instructions are intelligible and promise favorable results at a reasonable expenditure of energy and money, still others are so hopelessly ignorant and shiftless or, worse still, so cunningly dishonest that they could never play any active part in assisting in the work of control but might play a passive rôle or even actively resist measures to combat the disease. There is some hope of utilizing the first two groups of stockmen in eradication work, but nothing short of the strong arm of the law will suffice to deal with the last group. Unfortunately for the sanitarian communicable animal diseases are just as prone to attack the cattle of one group as those of another.

To what extent shall or can we depend upon the local practitioner for the work of control and eradication of infectious abortion? It seems to me that herein lies our great hope. With ever-increasing frequency we are hearing of the lessened incomes from horse practice and the great future in cattle practice. Without attempting to discuss the relative merits of these two lines of veterinary practice, we may say with some assurance of correctness that in the field of cattle practice infectious abortion is responsible for a large part of the veterinarian's work. Especially is this true in so far as abortion disease or *Bact. abortus* infection is directly or indirectly accountable for breeding troubles of

cattle. The breeding difficulties following or complicating abortion disease are hardly the point of attack but, rather, the result of factors that should receive the attention of the sanitarian. We think that we can see some difficulty in interesting the practitioner to the extent that he will be at all anxious to focus his attention and that of his client on the matter of removing causes rather than on the less fundamental work of repairing damages wrought by these causes. This is probably the inherent weakness in leaving sanitary work of any kind to the unofficial practitioner. Not until the veterinarian is placed in the position of a semi-public official and made to function as such, can he be of the greatest service in the control and eradication of animal plagues. As things now stand, the practitioner can do a great deal for his client in the way of protecting him against unfortunate purchases and in overcoming the evils resulting from the effects of abortion infections, provided, of course, he is willing to keep himself posted on the developments of his science in connection with the disease. We are noting with much satisfaction a healthy yet critical attitude on the part of veterinary associations and periodicals toward the abortion and sterility problem. Veterinary colleges must take on abortion and sterility as one of their major projects if they are to serve animal husbandry and their profession. The practitioner also has a duty to his client in the matter of protecting his reputation when sales of cattle are involved. We have on a number of occasions been consulted by stockmen anxious to maintain fair dealings. It will be admitted that it is a matter requiring intimate and accurate knowledge of the disease in addition to a judicial frame of mind to properly advise in these cases. We believe, then, that it would be possible for the veterinarian in practice to deal with the abortion problem, as well as it can be dealt with at present, provided he were willing to keep himself informed and provided he were able to command the proper response from his client.

The control of the disease by the official sanitarian is the subject properly under discussion in this paper. The writer is afflicted with the same complaint that all our live stock sanitary officials suffer from, viz., a reluctance to tackle the problem. We all wish that the whole matter could be handled by the local practitioner or possibly by the specialist; but we all know it isn't being handled as it should be. Personally I see no very promising legitimate field for the itinerant specialist and certainly the local practitioner is having his troubles. Perhaps the whole

difficulty is traceable to the research man who, we must confess, has failed to make himself very clear to the practical man, probably because the subject is not yet clear in his own mind. One thing that we may hope for and expect from the official sanitarians is recognition of the existence and seriousness of the disease and an effort on their part to include it in the list of dangerous communicable diseases and to make a start in treating it as such. It seems to me that such a step would encourage the local practitioner to warn his clients of the impending legal status of the disease and the significance of such a status. Quite certainly nothing is to be gained by awaiting the demands of the human sanitarians to control the disease because of its inter-communicability to man, no satisfactory evidence of such transmission having been adduced and much evidence to the contrary being available.

Universally the live stock sanitary authorities of America have lacked the courage to undertake the problem of eradicating infectious abortion in the vigorous manner that they have fought other infectious diseases. Let us hasten to come to their defense, however, at the expense of the investigators who, it may be averred, have failed to furnish any tangible facts on which to build any program of eradication.

As early as March 24, 1909, the Committee of the British Board of Agriculture and Fisheries reported on the official control of abortion, making these statements: "With a few exceptions the witnesses expressed themselves as strongly in favor of compulsory notification of cases of abortion and premature calving. No witness was altogether opposed to notification being made compulsory, but one or two appeared to have formed the opinion that it might be advisable not to require notification except when several cases of abortion had already occurred in a herd, and one witness thought that the society which he represented would not approve of compulsory notification unless it were accompanied by enforced restrictions on animals that had aborted."

"Seeing that all the witnesses who appeared before us accepted the view that the disease is contagious, it is not surprising that they were all agreed that a stop should be put to what appears to be a very common practice, viz., that of selling cows that have recently aborted. Speaking generally, it may be said that the evidence laid before us with regard to this point indicates that public opinion is ripe for the placing of restrictions on the move-

ment of cows that have recently cast their young from contagious abortion."

"The evidence with regard to this point [restrictions on exposed cows] was less unanimous. The majority of the witnesses expressed themselves as being personally in favor of placing some restrictions on the movement of pregnant cows known to have been recently exposed to risk of contagion, and still more strongly in favor of preventing the free movement of pregnant cows proved by some reliable test to be actually infected."

"Three witnesses were opposed to any interference with animals only suspected on the ground of exposure to risk of contagion, but thought that restrictions should be placed on the movement of in-contact cows ascertained to be actually infected."

"One witness believed that the members of the society which he represented would object to any interference with pregnant animals known to have been exposed to risk of contagion."

"Five of the witnesses deprecated any delay, and thought that immediate action should be taken, at least to the extent of compelling notification of the disease and imposing some restriction on the movement of cows that have recently aborted. Only one witness thought that it would be better not to do anything at present except to set about educating farmers and stock-owners as to the pathology of the disease, while two were in favor of delay for a year or two, provided there was a prospect that in the interval some valuable new discovery regarding the means of dealing with the disease might be made."

"It cannot be denied that some owners succeed over long periods in keeping their herds free from this disease. In some cases chance, more than foresight, appears responsible for this result—the owner has been lucky enough never to purchase an infected animal. In other cases the herd has been kept healthy because it has been mainly self-supporting, only a few animals being purchased from herds known to be free from the disease."

"It is obvious, however, that in the ordinary circumstances in which the cattle trade of this country is conducted breeding or milking herds must, as a rule, be recruited by the purchase of cows or heifers without any real assurance that they have not been exposed to the risk of contagion, and in the absence of such an assurance the purchaser has no safeguard, since infected animals display no symptom by which their dangerous character can be recognized. Broadly speaking, therefore, private effort

alone is foredoomed to failure as a means of preventing the spread of epizootic abortion. And in this connection we may say that we cannot accept the suggestion that the existing state of affairs would be sensibly ameliorated if farmers were better informed regarding the pathology of the disease. We feel bound to accept the view put before us by the majority of the witnesses, that the fundamental fact concerning the disease—its contagious nature—is now very generally known to stock-owners. Sinister evidence of this is furnished by the too common practice of immediately selling a cow that has aborted, and of exposing her for sale together with a calf falsely represented to be her own.”

“Public or state intervention with a view to prevention of a contagious disease appears to be justified when—

- (1) It is recognized that private or individual effort as a means of combating the disease is from the nature of the case inadequate;
- (2) Knowledge regarding the disease has reached such a point that it is possible to devise regulations which are likely to prove effectual if enforced by law;
- (3) The weight of opinion amongst those whose interests are affected by the disease is in favor of state control;
- (4) The loss occasioned by the disease when uncontrolled exceeds the probable cost of the measures required to counteract it.”

RECOMMENDATIONS.

“We, therefore, recommend that, as a preliminary measure, epizootic abortion in cattle should be dealt with under an order of the Board of Agriculture and Fisheries requiring—

- (1) Compulsory notification of suspected cases of the disease;
- (2) Veterinary inquiry to establish the existence of disease on any particular premises; and
- (3) Temporary isolation and restrictions on the movement of any cow that has recently aborted.

“We also consider that in the event of effect being given to the above recommendations, such measures as may be thought necessary should be taken to avert the possible introduction of infection in cows imported into Great Britain from Ireland, the Channel Islands, or the Isle of Man.”

The action of the British Board of Agriculture and Fisheries is highly commendable and the report of its committee very interesting and valuable and the committee's recommendations wise and courageous. Similar action in America is needed.

So far as we know there has been no official inquiry made into the abortion situation in America with a view to definitely laying plans for its official control. At the 1916 meeting of the U. S. Live Stock Sanitary Association a Committee on abortion was authorized. At the 1917 meeting of the association a report was made which attempted to summarize our knowledge of the disease. Possibly those who have read the report are impressed by the fact that it is more of a summary of our ignorance of the disease. At any rate, your attention is called to a few questions that are *a propos* and the brief paragraph in answer thereto.

Is the abortion situation in the research, extension (educational) or regulatory stage?

What should be the official attitude toward the disease?

Should abortion be classed as an infectious disease within the meaning of the law?

Give your suggestions for a practical method of control.

Is the "state accredited herd plan" feasible?

Are we ready for uniform measures of treatment and control?

"Nearly everyone admits that infectious abortion is in the research stage, about half of the answers indicate that some educational or extension work might well be done, and only a very few venture to advise that a careful attempt be made in the direction of regulatory measures. Every shade of opinion is expressed relative to the proper official attitude toward the disease. The same is true in regard to classing the disease as infectious within the meaning of the law. The majority, while admitting that it is an infectious disease, would hesitate to treat it as such by regulatory measures until more accurate knowledge is available. A few detailed replies offering many apparently logical suggestions as to practical methods of control were received, but, on the whole, the answers show a very serious lack of agreement on any rational method of procedure such as all can agree upon in the control of many other diseases. The state accredited herd plan does not seem feasible for the present. With the rarest exceptions no one believes that we are as yet ready for uniform measures of treatment and control. Several gratuitously note that uniformity is not possible with any disease."

Surely this is a most discouraging state of mind in which to find American live stock sanitarians. During the present summer letters have been addressed to the state veterinarians of each state requesting information relative to legal and regulatory measures in force in the respective states. While replies were not received in every case, enough was learned to satisfy us that the well-established live stock sanitary boards are reluctant to ask their legislatures for specific laws regulating abortion disease or to make regulations with the powers already possessed. Our present lack of knowledge concerning the disease and the interference with the live stock industry appear to be the excuses offered for taking no action. The fact that some department of the state is engaged in investigations into the nature of the disease is also apparently utilized as an excuse for not doing something officially to control the disease. There is some danger to the cause of eradication in such an attitude. Most assuredly we cannot await the last word on the nature of the disease before taking official steps to mitigate the evil caused by it.

A few quotations from our correspondents will illustrate the frame of mind they are in. "It has not seemed advisable to establish any quarantine regulations in this respect with the present knowledge of that disease, and I do not see how any such law or regulation could be passed and enforced without materially interfering with the live stock industry. To me it appears that the work in this line should be purely educational, and should be taken up not alone with the veterinarian but with the farmer. The farmer himself can do a great deal towards the suppression and control of contagious abortion." Again: "— up to the present time this Board has, because of lack of knowledge, not felt justified in issuing any regulations covering this disease. We do, however, advise owners to observe the three following measures:

- (1) Animals from infected herds are not to be sold except for slaughter purposes.
- (2) No fresh animals to be introduced into the herd.
- (3) Breeders not to be bred until at least a period of three months has elapsed."

"I am of the opinion that it would be wise to issue regulations from time to time as our knowledge of the disease is increased."

Some comment in passing seems desirable on the above quotation, both because of its inherent merit and because of the soundness of its author's judgment. Of the last sentence no discussion

is necessary since it is generally agreed that regulations subject to modification from time to time are far better than specific legislation for the control of most infectious diseases, especially for those concerning which our understanding is in a state of flux. The natural criticism directed toward the quotation is this: If it is wise to advise cattle owners to observe the three measures, why is it not wiser still to enforce the adoption of such advice through official regulations? Personally I do not think a single one of the measures should be or could be enforced for reasons based upon a knowledge of the disease and the way it manifests itself in herds and of the desires and practices of owners of such herds, men having the very best interests of the cattle industry at heart. This is knowledge possessed by all of you. There are occasions when cattle owners should not sell out of infected herds for the public good, or introduce new animals, infected or non-infected, into their own herds, or breed certain cattle within certain variable periods of infection for their own good, and it would be for the best interests of the cattle industry if on such occasions regulatory measures could be enforced, but I question whether they can be enforced at the present time.

We will refer to this matter again, but at this time let us quote further: "Our agricultural law places certain restrictions on diseases in animals of an infectious nature, but we have never attempted any specific measures covering abortion, owing to the lack of knowledge and the confusion that would result were such restrictive measures adopted."

"In my opinion, regulations that could be modified, as occasion might indicate, would be better than specific laws, which are difficult sometimes to amend or change. I do not believe that our present knowledge of the disease is sufficient to warrant attempting much regulation on the movement of animals which may be infected with or exposed to this disease."

Another state veterinarian says: "This subject has been discussed at our board meetings but it has been concluded that until we know more of the disease and the extent of its existence that we could not issue a satisfactory regulation. *If we know of an infected herd we attempt to prevent sales to healthy herds.*" (Italics ours.)

The last sentence in the above quotation contains the thought that should be uppermost in the mind of anyone attempting regulatory interference with the spread of infectious abortion through restrictions on the movement of cattle. There are certainly suffi-

cient reasons for the adoption of such a regulation; there are very valid reasons for preventing the introduction of infected cattle into non-infected herds and usually not sufficiently valid reasons for preventing the introduction of cattle from infected herds into infected herds under proper supervision. Perhaps the most serious obstacle to the execution of such a regulation is the matter of determining what constitutes an infected herd or more particularly an infected animal or vice versa.

Still another quotation from a man of wide experience: " * * * we have no special legislation in regard to this disease, although I believe it could be covered by our general act covering contagious diseases. (This is the case probably in most states. w. g.) However, this would be a very difficult disease to regulate under our sanitary laws, since, as yet, we have not determined at what stage this control should be exercised. In the first place, some of our scientific men who have made extensive experiments in regard to this disease would lead us to believe that every herd is infected with the germ that is believed to be the causative factor in contagious abortion. The question, then, would naturally arise, where the Live Stock Commission or State Veterinarian would draw the line, whether we would quarantine a herd after they had had one abortion take place, provided that a test on the blood of several of these animals showed that the germ was present in the herd, or whether we would test out herds by the complement fixation test and quarantine the same as we would cases of tuberculosis by making the tuberculin test.

"The question naturally arises, inasmuch as the existence of the germ seems to be so general in cattle that show no physical symptoms of its presence, are we sure that this is the true causative factor and how long can it exist in a herd before its ravages are felt?

"Inasmuch as it is the most severe scourge that the dairy interests have to contend with, I believe it would be a wise procedure for each state that has any considerable dairy interests, to appropriate a sum sufficient to keep at least one man busy his entire time in carrying on experimental work in an endeavor to determine positively that the *Bacillus abortus* is undoubtedly the true causative factor, and approximately the length of time that this bacillus may exist in a herd without being transmissible to other animals that might be associated with this herd for a short length of time, such as at fairs or public sales."

Certainly the state veterinarian quoted above is in no state of mind to formulate any very drastic or comprehensive regulations for the control of infectious abortion. Probably the majority of state veterinary officials share his views.

The idea of not interfering with the cattle industry and that very fatal attitude of wanting to do nothing until everyone does the same thing is well expressed in the following: "As a suggestion I do not believe in making such regulations that would be a detriment to the cattle industry of our country, but I fully appreciate the fact that regulations should be in effect as far as possible in order to control, as far as possible, this one disease. I believe that such regulations should be of a universal nature so as to involve every state with the same regulations."

It seems to me that some start toward regulation is now necessary so that the detriment to the cattle industry of the country may be overcome as quickly as possible. While it is true that regulations could be and might be more detrimental to the industry than is the disease itself, yet even our vast ignorance of the disease does not preclude the possibility of drafting and enforcing reasonable and beneficial regulations. To await the universal adoption of uniform regulations is out of the question, being without precedent and without any possibility, or at least probability, of accomplishment, to say nothing of its being unnecessary. *What is needed is wise action, somewhere, suited to local conditions. With laws and regulations for the control of this disease America must proceed in the characteristic American method, the experimental method, applying the initial experiments to localities here and there without endangering the industry as a whole and with the expectation that there will be learned something of value that can be applied, perhaps with modifications, elsewhere. Uniform regulations must be regulations that have stood the acid test of practical experience so far as infectious abortion is concerned.*

One state has evidently made an attempt at some control. The state veterinarian says: "We handle contagious abortion in Indiana under our contagious disease law, which prohibits the transportation of these animals and gives us the right to quarantine the farm where such disease is found. We believe that this trouble should be handled under regulations adopted from time to time, governed by the locality and the amount of disease in such locality, the time it has been present there, etc."

Another state has gone still further. The state veterinarian of Oregon writes: " * * * we have a specific law relative to the making of an affidavit on the part of the owners prior to offering their animals at public sale covering the health of the herd so far as infectious abortion is concerned. Their regulation is as follows: "Animals infected with infectious abortion shall not be sold for purposes other than slaughter until they have been proven free from the infection."

Also: "No public auction sale of any herd or part of a herd of dairy animals, or animals intended for breeding purposes, shall be held except under the process of court, unless all the animals offered for sale have, within twelve months prior to such sale, been submitted to a tuberculin test and received a certificate of health from a qualified veterinarian, setting forth the following facts: That the animals have given a negative reaction to a Board-approved method of tuberculin test administered in a careful, correct and conscientious manner; *that the owner has executed a sworn statement that no infectious abortion or abortion disease (characterized by a premature delivery of the foetus, retained placentae or sterility) has existed in the herd for a period of two years next preceding the date of the sale; or, that abortion or abortion disease has existed in certain animals of the herd within a period of two years next from the date of sale, and that certain stated animals have aborted or exhibited other symptoms but appear to be free from the disease. Such statement, if abortion or abortion disease is reported to have been present within the herd within two years next from date of sale, must be announced to the patrons of the sale by the auctioneer, who is by this Act held equally liable with the owner for the violation of this section;* provided, the Board may exempt from inspection and the tuberculin test the bovine animals offered for sale at public auction in any certain district in Oregon, in which tuberculosis and abortion or abortion disease is not known to exist or be prevalent. Such public sale inspection exemption must be in writing and must be issued by authority of the State Live Stock Sanitary Board and must be signed by the President and Secretary of the Board."

To quote further: "The subject of infectious abortion is one in which regulations and legal requirements will not produce definite results because too little is known of the etiology and cause of the disease. I believe that good results can be had by requiring owners to make affidavits concerning the health of

their herd. They will then not be disposed to get rid of a badly diseased herd which, generally speaking, must be conceded to be the most dangerous procedure that can be carried out."

The attention of interested parties is directed to a note in the April, 1918, number of the American Journal of Veterinary Medicine by Dr. Dyson, who proposes a bill to the Illinois legislature the main points of which are as follows:

"No cow or heifer, except unbred heifers under two years of age, shall be imported into Illinois for dairy or breeding purposes (1) unless said animal is within four weeks of completing full term of gestation; or, (2) unless said animal has within a period of six months given birth to a live and fully matured calf; or, (3) unless the owner makes affidavit, certified by the live stock sanitary authorities of his state, that his herd and premises are free from infectious abortion. (4) To cows or heifers sold at public auction within the state of Illinois the same rules are to apply."

In conclusion permit me to quote a paragraph made in the June number of the same periodical in reply to Dr. Dyson's proposal:

"As a general principle I would oppose the suggestion of Dr. Dyson on these grounds: Live stock sanitary legislation or public health legislation in general should never attempt to direct the activities of public servants in detail, but the proper officials should be clothed with adequate powers enabling them to promulgate and to enforce regulations respecting any disease or condition that may exist under any set of circumstances. Such a system would demand only the highest types of public officials, only those who could be trusted absolutely. It is to such officials and to such a system that I look for relief in the control of abortion, but not until a vast outlay of money, time and energy (mental particularly) have been judiciously expended in studying the disease in an effort to answer the many unanswered questions about the disease."

DISCUSSION ON PAPERS OF DRs. FITCH AND GILTNER.

DR. POTTER: In conducting this discussion I will not attempt to differ to any great extent with the writers, but simply to amplify some of the statements which they have made. 'Dr. Fitch has gone with some detail into the discussion of the past. I will not attempt to go into that, but I will try to point out some

of the shortcomings of the test when applied to field conditions. He has told you of the many difficulties encountered when applying the fixation test, and that the agglutination test is apparently much more reliable in reaching a diagnosis, and that it has not the same amount of difficulty connected with its application.

He brought out one thing which is very significant in connection with this disease, and that is the secondary infections and also the allied conditions of sterility and retained afterbirth. As to the secondary infections the importance of those are emphasized by their absence in the cattle under range conditions. We know how difficult it is to handle abortions in dairy cattle, but when we come to range cattle it is far less serious. The range cow is living out of doors, under natural conditions. Usually the herd is what we call new soil. When the infection hits it, it hits it hard. The disease goes through the herd like wildfire, and then subsides almost as quickly as it began. We have no secondary infections. The animal is not subject to the stable infections which make this disease so serious in dairy cattle. I believe that shows the importance, therefore, of the secondary infections.

He has referred to the work of Rettger, and I think most investigators know of his work, which has recently been published. In his work, while there are many things with which we cannot agree, still much valuable work has been done in attempting to show the critical period—that is, when the infection is most apt to take place. We cannot agree with Rettger in his estimate of the value of these tests. He seems to think a reaction means infection and the presence of the organism in the animal. Now, if I know anything about the subject at all, it seems to me that indicates the presence of antibodies, not necessarily of the organism; and a reaction may sometimes indicate immunity rather than infection. Therefore an animal which reacts may under some conditions be more valuable to a man than one which does not. So, the tests are of very little value to a man if he wishes to import animals from other herds.

Neither can the serological tests be used as a basis for eliminating animals, because of this fact: That it may indicate immunity rather than infection.

So, I believe Dr. Fitch has brought out very well the fact that the test cannot be relied upon in regulatory work. I believe he brought out its relative value—that is, the relative amount of infection in the herd, which is a good point. I have had that

borne out in my own experience and, further, in regard to the infection of young cattle. I worked with a herd of nearly two thousand animals, a mixed herd of pure breeds and grades divided about equally between mature cattle and young ones. We took blood samples from both herds and tested them out at Washington. The results were remarkable. In practically all of the young stock the reactions were negative, only five or six per cent gave positive reactions. The proportion of abortion among the young animals—that is, in first pregnancy—was about the same. The method of handling the herd was as follows: As soon as heifer calves born in the heavily infected herd were able to maintain themselves under the same range conditions in which they lived, they were removed from the herd and placed on pasture. They were not brought back until about to calve for the first time. They were bred out on pasture by supposedly clean bulls that had not been used for the purpose before. Not until the second pregnancy did they have much difficulty, and then they had plenty of trouble.

And that seemed to show the relative trouble they would have in a herd. I think that bears out Rettger's experience. He says he does not believe the organism persists in the herd from the time of first pregnancy; and from my experience I would substantiate that statement.

I believe most of us would agree with Dr. Fitch in his statement that we should consider all abortions as indicating the presence of the disease, and take the necessary precautions—not to depend upon laboratory methods alone for the control of this disease.

Now, in regard to Dr. Giltner's paper, the first item he points out is the necessity for education. I had a rather amusing experience a short time ago. I had been talking to a bunch of farmers about hog cholera. At the end of the meeting they brought up the subject of contagious abortion, as they usually do, and one said: "Isn't it true that the pure breeds are more susceptible than the short horns?" I said: "No, I don't think so; the trouble is at the other end." (Laughter.)

That shows the ideas some of these men have, and it points out the necessity of our educating the farmers in regard to this disease.

Dr. Giltner believes we can accomplish much by taking up the work with the local practitioner and educating him. I think we have to thank Dr. Williams in that respect, because he has

been striving so many years in trying to educate the local practitioner, and in trying to get the local practitioner to educate the farmer in the care of these animals. Dr. Giltner has emphasized the reluctance of authorities to regulate this disease. They try to find excuses—we might use scriptural language, in which it says: "They all with one accord began to make excuses." I think it is more a lack of courage than anything else. We all understand the immensity of the problem, and don't know where to begin; and he brought out another point which I have found to be responsible for greatly disseminating the disease—that is, the dishonest selling of diseased cattle; and we never will get anywhere in the control of the disease until that practice is checked.

He quoted from one man who did not wish to take action until we had uniform regulations north, south, east and west. We are familiar with this situation, and have reviewed it from a countrywide standpoint. To have uniform regulations is absolutely impossible, because if any disease presents sectional problems it is this one. The range animals and the dairy animals live under very different conditions, and this has very much to do with the amount of abortion and its manifestations. So, the problems are largely sectional.

If I may I would like to state my own view in regard to this problem of the control of the disease. I think we will not get anywhere until we attack the problem as we have attacked Texas fever, foot-and-mouth disease, scabies and so on; that is, have the campaign directed by some central organizations—we have such in the Bureau of Animal Industry—and have them to assign problems to the various sections, and have them worked out locally; and the Bureau of Animal Industry is in a position to assemble all this information and digest it and put it out in such form that it is available for the use of all. Then we will be making progress. We will conserve the efforts of those working with us; and in no other way can we hope to do anything along systematic lines. (Applause.)

DR. SCHROEDER: I wish to ask Dr. Fitch whether he has ever failed to get reactions in animals in which he has actually demonstrated the presence of abortion bacilli? My reason for asking this question is that I have long believed that one of the first steps in the control of abortion disease is the exclusion of all reacting cattle from uninfected herds.

Biological tests for abortion disease, it seems to me, are often criticised adversely because of a misconception regarding the

kind of information we may expect from them. No complement fixation or agglutination test, no tests with products like tuberculin, mallein, abortion, etc., can be regarded as a means through which we are enabled to forecast the future of an individual animal. The tests are not prophetic; they inform us that a definite but often concealed event has occurred, an event which may have a superlatively important bearing on the degree of safety with which the tested animals may be permitted to associate with other members of the species. Positive reactions with abortion tests mean that an animal has been attacked by abortion bacilli; they do not mean that an animal has aborted or will abort, any more than a typhoid fever test means that the tested person will shortly have symptoms of typhoid fever, or will die from a perforated bowel, or some other condition at times associated with typhoid fever. Taken for what they are actually worth, biological tests have a very high value, and are, moreover, amazingly reliable.

And now, while I am on my feet, as this is a general symposium on contagious abortion disease and I presume we are not obliged to confine our remarks to those phases of the disease to which the papers presented have called our attention, I wish to make a few remarks about a pamphlet on abortion disease which was recently sent me. The author of the pamphlet is Professor Williams, whom, I am pleased to observe, is present at this meeting.

The pamphlet in question is part of the "Cornell Reading Course for the Farm"; it bears on its face the high authority of "Cornell University," and it was published and distributed in accordance with an "Act of Congress," or, at the expense of the Government; and this pamphlet contains dangerously misleading statements which are at variance with the best obtainable data competent, reliable investigators on abortion disease have supplied us. I will read you several paragraphs contained in the pamphlet, and I wish to ask Professor Williams on what specific evidence he bases the statements made in these paragraphs. It may be that he has newly discovered evidence which he is ready to give us. Beginning at the bottom of the fourth page (page 164) is the following:

"This infection does not spread readily by ordinary contact, except in the case of scours and pneumonia in newborn calves. A cow may abort or have retained afterbirth and be kept in close contact with pregnant or non-pregnant cows without known

danger. For all practical purposes, the disease is spread, so far as is known, almost, if not wholly, at two periods: when the calf is in the uterus or during the milk-feeding period after birth; and during copulation between adults. The first of these periods is the more important. In the unborn calf, the infection passes from the uterus of the cow through the afterbirth, reaches the fluid in which the fetus floats (amniotic fluid), and is swallowed with it. After birth, the infection is swallowed with the milk. Apparently the infection promptly reaches the genital tract of the calf and remains there until breeding age, when it may cause abortion during the heifer's first pregnancy."

I have studied the available evidence pretty thoroughly, and have failed to find data to prove that copulation is responsible for the communication of abortion disease from animal to animal. Calves from infected cows may react with abortion tests, and may actually be infected with abortion bacilli; but, the reactions are passive in character, and, after their decline, there is no evidence to prove that abortion bacilli have remained in the bodies of the calves.

Another paragraph in the pamphlet reads as follows:

"The infection that causes the loss in the pregnant cow, whether in the form of abortion, premature birth, or retained afterbirth, is present in the cow's uterus when she becomes pregnant. Either it was in the uterus when she was bred to the bull, or it was introduced by the bull during copulation. If the uterus and the cervical canal, or mouth of the womb, are healthy when pregnancy occurs the uterine seal is formed very promptly, firmly closing the canal so that infection cannot enter. So far as is known, a pregnant cow or heifer cannot become naturally infected in the uterine cavity after the uterine seal has formed."

The farmer, not the veterinarian, or the bacteriologist, or the man technically trained to judge for himself, is informed that the infection swallowed by the calf promptly reaches the genital tract and remains there until breeding age, and then may cause abortion during the first pregnancy. On the same page he is informed that "Either the infection was in the uterus when the cow was bred or it was introduced by the bull during copulation." That is to say, if the cow swallows the infection, contrary to what promptly occurs in the calf, the uterus is quite safe.

Those who know that rapidly increasing evidence tends more and more strongly to prove that the commonest mode of infection in abortion disease is the ingestion of abortion bacilli during the period of pregnancy, and that pregnant cows above all others should be protected against food and drink contaminated with abortion bacilli, will realize that it is dangerously misleading to teach farmers that the time of infection is limited to two periods; "calthood and copulation," and that it is even more dangerous to teach farmers that "a cow may abort or have retained after-birth and be kept in close contact with pregnant or non-pregnant cows without known danger."

There are other statements in the pamphlet which are equally objectionable, but I do not wish to impose longer on your time. I do wish to say, however, had Professor Williams published his curious, inconsistent hypotheses in a technical journal, or had he presented them to a body of trained veterinarians, I, for one, would not have said a word about them. But I do not feel that we can ignore the distribution to farmers of misleading and dangerous matter at Government expense and with the seeming indorsement of a great university. I would be glad to hear from Professor Williams if he has discovered new evidence which justifies his conclusions, and which is contrary to the data supplied us by world-famous men like Bang and Stribolt, Stockman and McFadyean, Mohler, Preisz, Zwick, Poels, etc., etc.

DR. W. L. WILLIAMS: Gentlemen of the Association, I plead guilty to have written Lesson 131.

Lesson 131, Contagious Abortion of Cattle, is a part of the Cornell Reading Course for the Farm. The writer was requested by duly constituted authority to prepare the bulletin, or lesson, and it was published and distributed under authority of the Act of Congress of May 8, 1914.

I think if there is any disease of animals upon which one can be readily misunderstood it is contagious abortion. I believe I have been misunderstood every time I have spoken or written a word on contagious abortion, and I don't think any man has misunderstood me more continuously from beginning to end than Dr. Schroeder.

In this publication I was asked to express my own opinion and not the opinion of anyone else. I have the peculiar habit when I am asked to express my opinion of confining my expression to the opinion of W. L. Williams, and giving it in as exact

words as I can, and then standing responsible before the profession for the opinions expressed.

DR. J. W. CONNAWAY: Mr. Chairman, I had it in mind when I came to this meeting to invite both Dr. Schroeder and Dr. Williams out to Missouri at our Farmers' Week, to talk to the farmers (laughter). But how to prevent discussions like this we have had here today before those farmers would be the problem. I feel that they all realize that the control of this disease is a great problem. I feel, like Dr. Schroeder, that it is very important to educate the farmer and give him something plain and simple, that he can put into practice, something that he can do; and, on the other hand, teach the veterinarians the influence they can exert, and let each man do his own job the very best he can; and by this kind of coöperation I think we can make great progress in the control of this disease.

I regard Dr. Schroeder as one of our safest scientists in this matter of contagious abortion, and I regard Dr. Williams as one of our ablest surgeons. If he would stick simply to the sterility problem and try to overcome those things that produce sterility, and to teach—I have told him, in a private conversation, that one of his great functions, as I see it, is to be a sort of specialist, to go over this country, to teach the practicing veterinarians, or groups of them if we can get them together. I will get fifty of them together this winter if he will come out and teach those men something of the manipulation; and also teach them that it requires experience, that they probably cannot go right out at once and do this thing perfectly—and he told me they could not—but to impress on them that it is a matter of experience.

Now, these two things go together, sterility and abortions. They are not necessarily associated, in my opinion. Retained afterbirth and infection of that uterus—the after results may leave a chronic metritis that will leave that animal a sterile animal. Here comes in the work of the local veterinarian, who ought to be on the job and clean up that cow in the right way, so as not to have her become sterile. This is a surgical procedure, an important surgical procedure. It ought to be done whether that cow has had contagious abortion or not.

Now, leaving this for a moment and taking up the work reported by Dr. Fitch, I believe that Dr. Fitch left the impression on this body that in a practical way we could not get very much help out of these tests so far as the control of contagious abortion is concerned. I hope you will not go away with such an impression.

He may not have meant to give you that impression, but that is the sort of impression I got in listening to him; and it is the impression, I think, farmers would get if they had listened to this presentation of the test for contagious abortion. Here are so many conflicting things that mix the farmer up. The farmer wants to know why. Now, in my work I have probably one hundred—possibly one hundred and fifty—herds on test, comprising probably six or seven thousand head of cattle that we have tested for contagious abortion at the request of men who suspected they had the disease in their herds. In some of these herds they were negative. In other herds, by far the larger number, they were positive. We expected this, because the men usually do not come for help unless they have had several abortions.

In this work we have had pretty much the same record, in our records, as were shown by Dr. Fitch. We find that cows that breed regularly sometimes will show a persistent positive reaction; and in that same herd we will find other animals that show persistent negative reaction and are regular aborters; but in our work we have not found, except in very exceptional cases, any of those negative reactors casting calves. I have found it a very valuable aid in cleaning up those herds.

I believe that every agricultural college ought to be doing this work for their farmers and breeders, and be helping the veterinarians in their work. I know in some herds it has given positive results in helping the man to clean up in this work. I think that over a period of three or four years ought to be sufficient time for us to judge the practical value of this test, and I am quite sure it will prove of great good.

Now, as to the explanation of some of these varying results. Sometimes a cow will abort, and you don't get a reaction. The farmer wants to know why. I had one of these cows which aborted, but we have her as a chronic negative. Some other farmers may say, "I have a positive cow but she has not aborted." He expects every one that shows positive reaction to abort. If we put a large amount of our data together and compare it with the experience of other men who have gone before in this work, we can philosophize in this way and explain matters. It will explain these tests and the nature of infection.

If we compare this with the hog cholera, for instance, some experiments we have made show the infection of hog cholera will persist in the hog for fifteen or twenty days after the injection

into those animals—I mean in a hog that has been vaccinated with the simultaneous treatment and shows no clinical symptoms of illness. You can cut off the end of the tail of that hog, draw the blood of that hog and inject it into another hog and give him the disease.

In the case of tuberculosis, the tuberculosis germ flows quite freely through the blood, and especially in advanced cases. We have proven this by drawing blood from animals infected, and injecting it into other animals, introducing the disease. Hogs show it quite readily.

Other work along this line has been quite negative, because they used guinea pigs and rabbits, into which you could not inject a large enough amount of blood to bring about reaction. But take a hog which has had tuberculosis and cut off the end of the tail of that hog and inject half a liter or less, 200 c.c., and we have reproduced the disease from the circulating blood drawn from the animal in that way.

Now, as to contagious abortion, this is not a disease, as Dr. Schroeder has told you (that is, topically), that confines itself to the genital organs at all. By preference it localizes itself in other organs of the body, preferably the udder. I did not believe that, Doctor, when you published that, but I found out you were right. And in other glands of the body they have found it. Possibly they have found it localizes itself in other parts of the body which Dr. Schroeder did not discover. So here we have an infection which is localized away from the tissue. Then we have all these bacilli out of their usual habitat, in the general circulation and in other organs. I have here some case reports—

PRESIDENT TORRANCE: Excuse me, Dr. Connaway. I believe I have been guilty this afternoon in allowing the discussion to depart from the usual rule of five minutes to each man. The discussion has been very interesting, but I will ask Dr. Connaway and those following him to adhere to that rule.

DR. CONNAWAY: I will close in a very few moments. The man believed he could infect by feeding, by injecting into the vagina, and by injecting intravenously. We have repeated those experiments and checked up with the complement fixation test. Our inbred heifers were tested and found negative. We bred these heifers and later on fed two with the germs, some from the Wisconsin laboratory, some from the Washington laboratory and some our own mixtures; all these we have fed, and in the

course of a few weeks we have produced the reaction. By testing the blood of those we can get the reaction, by feeding. In two we injected hypodermically. In about thirty days, and after two injections, we got the reaction there. One of these cows dropped her calf prematurely, in a couple of weeks. The other kept it up until the full term. And these were injected late in the pregnancy and not early.

In another we injected vaginally. This cow reacted. There was absorption of the bacilli, or at least, of the products, that gave a reaction in this one. This animal was too close to calving time to produce an abortion.

In all these cases, however, the calves came at least a week or ten days earlier than the normal time.

Two other cases were injected, two pregnant heifers that were negative before the experiment were injected, into the tests. In one the right quarter and in the other the left quarter, and both of these aborted. The complement fixation tests were positive. One dropped her calf over a month early, and the other carried her calf to the full term, and both calf and cow reacted to the test. Every cow responded to the experiment by the complement fixation test.

Dr. Williams contrasted natural infection with experimental infection. We know that the growing of these germs in the laboratory attenuates them, and that we should not expect the same degree of infection as we would have from a natural infection. This explains the difference. (Applause.)

DR. EICHORN: I don't think that there is any disease occurring in animals in which we have as great a confusion as in contagious abortion. We have had many symposiums and many publications and addresses, yet from the experience this afternoon there is no doubt that we are just as much in the dark on many phases of this disease as we have been in the past. Some years ago the same condition prevailed in regard to the diagnosis of the various phases of glanders. The Association at that time thought it even advisable to appoint a special committee to study glanders and especially diagnosis of the disease. This committee took up the various phases of the work and reported to the Association after two or three successive years, and it was considered a finished work; and even today I believe it is considered by the country to be standard.

Now, I think that should be done in regard to contagious abortion. The papers here have no definite conclusion. I move

that such a committee be appointed, and I am quite sure by following this method we will get further in the study of this disease.

DR. HART: I should like to second all that Dr. Eichhorn has said. It seems to me there has never been a time when we should have a clearer understanding than we have in regard to this disease. It is clear as between Dr. Schroeder and Dr. Williams one is talking in the light of clinical detail, and the other man more or less generally. Bang's disease is caused by only one thing, and it is caused by the bacillus Bang. And I think that Dr. Schroeder's point of view and Dr. Williams' point of view are suspended around that; and I think the matter could be cleared up by the appointment of a committee as proposed by Dr. Eichhorn, and I second the motion.

PRESIDENT TORRANCE: It has been moved and seconded that a committee be appointed to report on contagious abortion.

DR. WILLIAMS: It seems to me that there comes a time in the building up of our knowledge of any disease that a committee such as that which has been proposed is appropriate and highly advantageous. At present I do not think we have reached that stage of development. I think personally that as many workers as possible should be induced to enter the field, and they should work perfectly free and unhandicapped; and that when they have reached certain conclusions and have obtained certain data that the data and conclusions should be published, and that in the formative stage of our views regarding a certain disease or group of diseases the greatest possible freedom should exist. I do not feel that this Association, or our knowledge of the subject of contagious abortion, is put back one particle by the difference of opinion existing between Dr. Schroeder and me. I think it a privilege and an advantage that Dr. Schroeder should express his views, and that I should express mine. Certainly there is no personal feeling on my part. I don't believe there is on Dr. Schroeder's part. And I believe Dr. Eichhorn might put us into the same room, with a knife, perfectly safely. I, for one, feel that it would be exceedingly unfortunate to put Dr. Schroeder and me upon a committee and compel us to come up here and speak in hearty accord. I don't believe it would be right to Dr. Schroeder or to me. I believe we should have the right to heartily disagree and not feel badly over it, and when we get through with this discussion and are in a position to come together and form some definite plan of action, then I should be glad to meet Dr.

Schroeder. So, it seems to me the time has not yet arrived. If there is any one particular point upon which some opinions are being formulated, then I think it very well; but to turn such conflicting views loose and then try to bring them together in a report I think would be very bad. If Dr. Schroeder and his honorable colleagues who agree with him are made the committee the report would be unsatisfactory to some other people. If I should be made chairman of that committee you all know it would not be satisfactory to Dr. Schroeder.

DR. H. P. HOSKINS: If I remember Dr. Eichhorn's motion correctly this committee was to be appointed for the purpose of getting the best methods of diagnostic work.

DR. EICHHORN: For the best study of it.

DR. H. P. HOSKINS: The United State Live Stock Sanitary Association has such a committee, and their report, I believe, was presented at Chicago, and I believe the report has been published. Why duplicate?

DR. EICHHORN: This is to extend over many years to come, not one year. The object would be to sift down all the work that has been done, and which has thrown additional light on our knowledge, and which can be presented to the Association, so that the members can receive the report here of the committee and will not have the confusion they have at the present time.

DR. W. H. HOSKINS: I have listened to these reports for hours, and when a man requires hours to present a paper, it shows we do need more knowledge on the subject. I hope the motion will prevail.

(The motion was put to a vote by the President, who stated that presumably the report will not be asked for before the next meeting of the Association, next year. The motion was carried.)

PRESIDENT TORRANCE: Is it desired that the President should name this committee, or does the Association desire to nominate the members of it?

DR. W. H. HOSKINS: I move that the Chair appoint them.

(The motion was seconded and, on vote, carried unanimously.)

PRESIDENT TORRANCE: Well, I would nominate Dr. Eichhorn, and as his colleagues Dr. Schroeder and Dr. Williams and Dr. Fitch, with power to add to their number—and Dr. Ward Giltner.

DR. WILLIAMS: I wish you would appoint Dr. Kinsley in my stead. I feel I should withdraw.

DR. KINSLEY: I hope to live more than one year.

DR. EICHHORN: I move Dr. Schroeder be made the chairman of the committee instead of me.

DR. SCHROEDER: I wish you would not put that motion.

PRESIDENT TORRANCE: I feel it would be quite inadvisable to let Dr. Williams retire from that committee. I think the presentation of his views would be most valuable, and with Dr. Schroeder there to criticise we should be sure to arrive at the truth. I think I will let the committee stand as appointed.

THE PRESENT STATUS OF SPECIFIC TREATMENT FOR CONTAGIOUS ABORTION.*

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It is now over twenty years since Bang¹ announced the discovery of the causative organism of contagious abortion of cattle. The identity of the organism responsible for the same disease in this country, with that of the European organism, was established by MacNeal and Kerr², in Illinois, in 1910. These discoveries stimulated many investigators to attack the problem of finding some remedy or agent for the prevention or cure of the disease. Naturally the search for such an agent was in two directions, viz., medicinal and biologic. This paper will deal only with the latter, although it might be stated, in passing, that up to the present time anything in the way of a chemo-therapeutic agent of real merit is much of the nature of a chimera.

The fact that the behavior of contagious abortion in a given herd, when not interfered with by the hand of man, suggests that a rather high degree of immunity is established after a succession of abortions, has led to experiments to produce such an immunity artificially. The agents used have been products prepared from cultures of the abortion organism, almost without exception. Most of the work on which reports are available has been done with killed culture of *B. abortus*, so-called abortion bacterins and vaccines.

Various methods have been used in the preparation of these vaccines. The dosages recommended by the purveyors of these products show extreme variations, from what appears to be a rather low dosage to what is considered a high dosage (from

*Read before the Southeastern Michigan Veterinary Medical Association, Detroit, Michigan, January 8, 1919.

85 billion to 1000 billion organisms). The number of injections advised is equally inconsistent, some advocating three, some four and some six treatments. The intervals between injections show the same wide variation. In fact, the practitioner can at present choose just about what he wants to suit his own convenience in the matter, or his preferences, if he has any. If he has to take into consideration the size of his bill, or his client's pocketbook, he can select anything from a course of treatment costing 75 cents to one costing \$2.00 per animal. To the best of our knowledge there is no publication available which gives directions for varying the dosage or the intervals between injections to meet local or individual conditions. Further, it might very properly be argued that the very reason why there is such a wide variation in the matter of recommended dosages is because none of the dosages employed has given uniformly good results.

At the recent meeting of the United States Live Stock Sanitary Association, held in Chicago in December, Dr. Williams very severely criticised certain biological manufacturers for continuing to market contagious abortion vaccines, in the face of the practical unanimity of opinion of competent authorities to the effect that such products were just about worthless. "No-cure-no-pay" propositions of various concerns came in for their share of censure at the hands of Dr. Williams, as well as the misleading advertisements of others. A great deal of credit was and should be given Dr. Williams for his courage in taking the stand he did. The evidence available certainly justifies his attitude.

For the purpose of getting the consensus of expressed opinion of various authorities on the value of contagious abortion vaccines, the writer has examined all recent reports and publications available. Care has been used to select only the most recent of these papers and reports for abstracting opinion, so that the resumé can be said to consist only of the very latest and up-to-date ideas on the subject. Besides this evidence, an opportunity has been afforded to examine a large number of reports on the use of contagious abortion vaccine experimentally. Many of these reports are valueless from a truly scientific standpoint, owing to the lack of care used in keeping accurate records and making final reports.

It is only fair to state that in quite a number of cases the outcome of the treatment was reported as "favorable" or "satisfactory," in the judgment of the owner or the attending veterinarian. Except in rare cases, no cows were left untreated as

controls in the experiments reported. Equally rare was a complete herd history. In many instances all the animals in certain herds were treated alike, virgin heifers, heifers in calf for the first time, mature cows, suspected aborters, known aborters, non-breeders, etc. Even under the best of conditions it is not often possible to get complete data upon which to base a fair estimate of the results of the treatment. Such cases do occur, however.

To show how easy it is for one to be led to believe he is getting desired results from a certain treatment, an instance will be cited which is illustrative, and at the same time rather amusing. A veterinarian wrote in to obtain some contagious abortion vaccine. The requisite number of treatments of our experimental product was forwarded. The vaccine was for bovines and so labeled. In due course of time a report on the outcome of the treatment was solicited. We were informed that the vaccine had been used on eleven mares, no abortions followed, and naturally the vaccine received credit for 100% success. Although this might be used as an example of non-specific therapy, we rather incline to the belief that it was a case where nature was not given the credit due her, but was overlooked because the vaccine had been used. Salt solution would probably have been just as efficacious in this particular case.

Some veterinarians deserve to be censured for the attitude they take on this question. Fortunately, known cases such as the following are few, but they do exist nevertheless, and should be frowned upon whenever encountered, certainly not encouraged. Dr. A. is asked to advise a client how to proceed to rid his herd of contagious abortion. He elicits from his client the information that the disease has existed in the herd for a year or more. Dr. A. has used contagious abortion vaccines in several herds with questionable results. At the same time he is aware of the irregular results reported by fellow practitioners. However, he advises his client that vaccination is indicated. When asked why he adopted this course, his explanation is somewhat as follows:

"Well, in the first place, I had to recommend something. From the history of the herd, I was of the opinion that the worst was over, and that probably there would not be many more abortions. I did not advise vaccination because I thought vaccine would clean up the herd. Between you and me, I don't believe the stuff is any good, anyhow. But I knew that if I did not vaccinate that man's herd, Dr. B. would, and there you are. I had to do something."

Manufacturers have been accused of making false claims for contagious abortion vaccines, thereby creating a demand for them, and, having created this demand, they feel fully justified in meeting it, very much for the same reason that Dr. A. treated his client's herd. Manufacturer X says that if he does not sell Dr. A. contagious abortion vaccine, his competitor will. In the case of this particular product it cannot be said that the demand comes as a result of the publication of work indicating that the product is valuable or has merit. At the present time the line is pretty sharply defined between those who publicly support the vaccine method of treatment and those who do not. On the one side we have those whose vision is dimmed by commercialism, while, on the other, we have men who have spent years in investigating and observing, and are in positions to give opinions that are free from bias and prejudice. These opinions are numerous and come from some of the very best men in the veterinary profession today.

There are a number of points that must not be lost sight of, if we wish to give a fair interpretation of the results obtained following the use of contagious abortion vaccine.

1. In the great majority of cases the vaccine is resorted to only in the declining phase of the trouble in a given herd.

2. Abortion disease is frequently a complicated pathological condition, and the number of abortions in a herd does not always tell the whole story.

3. Undoubtedly there are local conditions which play a prominent part in lessening or increasing the severity of the disease, regardless of artificial interference, and for this reason it is difficult to evaluate properly the results obtained by our present hit-or-miss, go-as-you-please methods.

Some rather questionable statements are found in the advertising matter distributed by certain laboratories. Frequently such statements are not accompanied by any experimental data to substantiate them, nor any references to such data. As an example, we will quote a paragraph from a circular on the subject of anti-abortion vaccine, viz: "The British commission reported that in instances where live cultures were used, the results were successful, but were of little or no avail if cultures were heated. Anti-abortion vaccine is prepared from a large number of strains of the bacillus of infectious abortion, isolated from widely scattered sections of America. *The organisms are killed without the aid of heat, which makes them practically as*

beneficial in producing immunity as though live cultures were used." I seriously question this statement.

Reference has been made to the opinions expressed by competent authorities on the value of vaccines. The annual report of the State Veterinarian of Nebraska³, for the year 1918, contains the following general statement concerning contagious abortion and sterility, and the remarks on vaccine treatment are illustrative of the present trend of opinion:

"The way to guard against the disease is by prevention and sanitation. Be careful when buying new animals to be placed in the herd. There are no drugs which are of any value in the treatment of this disease except antiseptics. Carbolic acid, methylene blue and some other drugs, which some claim have proven useful, are, in fact, of no value whatever. Anti-abortion bacterins have been put on the market and are being advertised extensively, but the manufacturers have as yet not been able to prove their value. Excepting the claims made by the biological houses, which they seem to be neither able nor willing to substantiate, there is no evidence whatever to prove that anti-abortion bacterins are worth anything. The best that can be said about them is that they are still in the experimental stage. This does not mean that they will never be perfected to a high degree of usefulness, such as other biological preparations have been developed, but until such time it would be folly to depend on their use in the prevention of the disease, and it would be money wasted to buy them."

A recent bulletin from the North Dakota Agricultural Experiment Station⁴, on the subject of abortion disease in cattle, contains the following paragraph:

"The fact that after abortion a certain degree of immunity is apparently established, combined with the success acquired through artificial immunity in a series of other diseases, is responsible for various attempts to control abortion disease by rendering the animals refractory to it by similar methods. In this country very little work has been done in the direction, partly, no doubt, because until the last few years the seriousness of the disease was not generally recognized. A far greater alacrity, however, was exhibited by the commercial interests who for some time already had flooded the market with a great number of so-called bacterins or supposed immunizing agents, claimed to have a great value in the prevention of a considerable assortment of diseases. The opportunity offered by the now well-advertised abortion disease was not wasted by those interests, and bacterins are now on sale, accompanied by even more or less spurious 'guarantees.' Those and similar bacterins consist of suspensions of killed bacteria and hence they are probably en-

tirely harmless. Their usefulness may, however, be questioned in the absence of well-controlled experiments and observations."

McFadyean and Stockman⁵, in commenting upon the results of experiments with "bacterin" treatments, state that the influence of the killed cultures was practically negligible, and their published data certainly bear out this conclusion.

In a paper by Drs. Adolph Eichhorn and George M. Potter⁶, read before the American Veterinary Medical Association, in this city, August 22, 1916, and published in the *Journal of the Association*, the following reference is made to the use of bacterins:

"Immunization with abortion bacterins is now being widely advocated by manufacturers of these products. The results obtained do not warrant the confidence which is expressed in the literature and advertising matter. Considerable experimental work has been conducted by the Bureau of Animal Industry on the effectiveness of bacterin treatment, and, while the results were somewhat encouraging, nevertheless generally good results cannot be claimed for such a procedure. In view of our findings, and also those of other investigators, the claims for the bacterins are unwarranted, and will not serve any good purpose in the control of the disease. Veterinarians will be prone to accept the statements made by the manufacturers at their full value, and possibly disregard other effective means by which the disease might be combated. It is possible that further investigations will establish a more effective method of immunization, but at present the bacterin treatment should be regarded as second in importance to proper sanitation."

Speaking from the standpoint of a practitioner, Dr. Cotton⁷ states as follows:

"Until we have something more positive in the line of immunization by vaccination, I am of the opinion that we, as practitioners, should not undertake to build up false hopes in the minds of owners of our herds throughout the country, by the use of the various vaccines that are now on the market."

In an article treating of abortion and its sequelæ, Dr. C. C. Palmer⁸ of Delaware College speaks of his experiences as follows:

"We have tried a system of vaccinating (by means of sero-bacterin) all new-born calves, but the results so far have been disappointing. Many of the calves seem to do well until two or three months of age, when they invariably develop scours and pneumonia. Further treatment with vaccines or serum was unavailing.

"Biological products for the control of calf diseases should be regarded as being in the experimental stage, and at the present

time our chief hope lies in the proper hygiene of these young animals. Vaccines and serums may be tried, but the hygienic factor should not be lost sight of."

I am personally familiar with the work that has been done by Dr. W. L. Boyd, at the University of Minnesota, and the following paragraph from the 25th annual report of the Agricultural Experiment Station, University of Minnesota,⁹ is merely an illustration of the results obtained in large numbers of experiments:

"Thirty-two young heifers were given a series of injections of large doses of killed abortion bacilli. The results so far obtained indicate that this method of vaccination is not satisfactory for the prevention and control of infectious abortion."

The opinions of Dr. Williams on this subject are so well known that they need little comment. However, in a recent publication¹⁰ he states:

"The administration of bacterins, vaccines or sera to the pregnant animal has been advocated, but these have failed. Like antiseptics, they fail to reach the location of the harmful infection in the uterine cavity. Their failure does not prevent some establishments from advertising and selling their products."

It should be distinctly understood that practically all of this adverse criticism has been directed against contagious abortion bacterins and vaccines consisting of dead organisms, whether they be killed with or without the application of heat. The use of vaccines containing living organisms is being turned to just now, in the hope that they will give a better account of themselves. The work of the English Commission and of Bang, in Denmark, is referred to in this connection. Experiments on a small scale are now being conducted in this country, and the results will be awaited with interest. It will likewise be of interest to note what the attitude of sanitary officials will be as to the distribution and use of the living vaccine. That it is a procedure attended by a certain amount of danger goes without saying.

The disadvantages of employing live bacilli are enumerated in a recent bulletin prepared by Dr. F. B. Hadley¹¹ of the Wisconsin Agricultural Experiment Station. They are as follows:

- (1) Rapid deterioration of the vaccine.
- (2) Slow development of immunity.
- (3) Temporary discomfort to the animal.
- (4) Danger of introducing the infection.

Of these objections, the second, the slow development of immunity, will probably be the most difficult to overcome. This is no fault of the vaccine, but is due to the very nature of the disease. It is always a more or less chronic infection. Practically without exception, those diseases which are successfully controlled by vaccination are the acute infections, such as blackleg, hog cholera, anthrax, hemorrhagic septicemia, and rinderpest, while such chronic diseases as tuberculosis and glanders have not been amenable to prophylaxis by any system of vaccination.

When we speak of immunity in contagious abortion it is not exactly clear what we mean by the term. Our laboratory tests that indicate a positive reaction tell us little of value in the case of the individual animal. An animal reacting positively to one of these tests today may abort tomorrow, or she may carry her calf to full term, and subsequent pregnancies may be terminated just as successfully. The future of these calves, however, is another matter.

This paper would not be complete without some mention of the use of a specific anti-serum. Some experimental work has been done with this product, but, again, the nature of the disease is such that the extensive use of the serum may never come about. When used as a prophylactic, the immunity afforded probably does not last over three weeks, necessitating a repetition of the treatment every three weeks until pregnancy is terminated. This method of treatment is too expensive, except in the case of extremely valuable animals.

As a curative agent the serum is again of little use, as far as the cow is concerned, on account of the nature of the disease. The abortion organism is rarely the cause of the death of the cow. If there are any complications following an abortion they are usually not due to the abortion organism, and therefore an abortion anti-serum is not indicated. Investigations would seem to indicate that the abortion organism is responsible for some of the common calf diseases, notably white scours, calf pneumonia, arthritis (navel-ill), etc. Therefore, a serum directed against this organism is indicated. However, there are other organisms which are just as likely to be implicated in these conditions, most important of which is the colon bacillus.

It is the practice of some laboratories to include the abortion organism in the antigen used for the production of white scours serum. We carried this idea even further and prepared a serum using equal amounts of abortion and colon organisms in the

antigen. This was used on herds where both white scours and contagious abortion existed. Clinical reports indicated that the results obtained with this combination serum were no better than when the regular white scours serum was used, and we decided to let well enough alone.

In closing, I would like to call your attention to a recent publication on the subject of the etiology of contagious abortion of cattle. If the findings of Dr. Theobald Smith¹² of the Rockefeller Institute, Department of Animal Pathology, are verified by other workers in different parts of the United States the least that can be said is that the question is more complicated than ever.

Dr. Smith has recently described an organism, a spirillum, which he has isolated in pure culture from the fœtuses of fourteen cases of abortion. The abortions occurred in a group of herds, under the same management, and during the investigation, which lasted over a period of about fifteen months, there were twenty-seven abortions, in which *B. abortus* of Bang appeared to be the etiological factor.

One of the most interesting facts brought out by the investigation is the absence of *B. abortus* in those cases where the spirillum was found and the absence of the latter when *B. abortus* was present. That the two organisms are not identical is shown by the lack of pathogenicity for guinea pigs, on the part of the spirillum, besides difference in morphology.

On the other hand, there are a number of points in common. The spirillum is evidently an organism that demands a reduced oxygen tension for successful artificial cultivation, and it has been found that it may be isolated in pure cultures from fœtuses under precisely the same conditions as *B. abortus*. Both organisms have been found in the gastro-intestinal tract, as well as the respiratory tract of the fœtus, quite regularly, but less frequently in the other organs. Both organisms have been found in the placental fluids.

For some unexplained reason the spirillum has not caused an abortion during the first pregnancy of any cow, but in all cases in which the spirillum has thus far been demonstrated the abortion has occurred during a second or later pregnancy. No inoculation tests have yet been made owing to a lack of suitable subjects. It is desirable—in fact, essential—that experiment animals used in the crucial test should be perfectly free from infection, with either Bang's bacillus or the spirillum, and they should likewise be free from any immunity to these infections gained by

exposure to them. Serological tests have been delayed, owing to the difficulty of getting the organism to grow satisfactorily on artificial media not containing blood or tissues.

If subsequent investigations show that the new organism is capable of producing abortion, as does the Bang bacillus, it is difficult to predict just what effect it will have on our present methods of handling the abortion problem. The next step will be for other investigators, in different localities, to try and confirm the findings of Dr. Smith. The fact that abortions among sheep and cattle in Ireland and Wales have already been reported as due to organisms similar to the spirillum is quite suggestive of the widespread character of the infection. Are the irregular results that have been obtained with bacterins made from *B. abortus* due to the fact that this organism was not operating in a certain percentage of the cases?

CONCLUSIONS.

1. The concensus of opinion, as expressed by recognized authorities, is to the effect that vaccines and bacterins made from dead abortion bacilli are of no real value in the prevention, cure or control of the disease.

2. Such preparations are probably harmless, in so far as any danger to the treated animals is concerned, but they may possess a potential danger by causing veterinarians to overlook other methods for handling the disease.

3. If veterinarians wish to make and preserve a reputation for being careful observers, scientific workers and ethical practitioners they should keep in mind the nature of this abortion disease and its sequelæ, treat it accordingly and endeavor to interpret results intelligently, at all times holding themselves aloof from any connection with the so-called "no-cure-no-pay" propositions.

4. Experiments with vaccines consisting of living organisms are apparently more encouraging, according to the work thus far reported. If a stable product can be prepared, for use under actual conditions, and a safe method of distribution and administration devised, the product may prove to be of considerable value in the control of the disease.

5. The use of anti-abortion serum is rather limited, owing to the nature of the disease. Theoretically, its employment in certain conditions is perfectly rational, if the value of the cow or her progeny warrants the expense.

6. Some clinical observations would suggest that the colon organism is more important, the common diseases of the new-born calf, than *B. abortus*, even though the latter is found in some cases of scours, pneumonia, arthritis, etc.

7. Our problem may be further complicated if the researches of Dr. Theobald Smith are confirmed, and it is shown that there are two organisms, instead of one, responsible for the abortions so prevalent among our cattle.

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HEMORRHAGIC SEPTICEMIA.

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Hemorrhagic septicemia is and has for the past few years drawn the attention of the veterinary profession to a greater or lesser degree depending upon the locality. Here in this section of Iowa the disease is frequently met with. Although no species of animals appear immune to the disease, the only forms that I have encountered is the bovine and swine form.

Hemorrhagic septicemia is caused by a group of organisms known as the Pasteurella or Bacillus Bipolaris Septicus group. It is a non-motile, gram negative, rod-shaped organism, 0.5 by 1 micron in size, showing a tendency toward bi-polar staining. As far as known it produces no endotoxin, hence no antitoxin is produced. The immunity conferable is based upon an aggressin and consequent anti-aggressin production; at any rate, regardless of the basic constituents of the immune bodies, immunity is, and can be, artificially produced, as is shown both in the laboratory and in the field.

In the outbreaks that I have observed, it was of an intense bacteremia type, acute and of a rapid course, ending in death. The above statement refers to the bovine type only.

Autopsy of the dead animals revealed the characteristic petechia and ecchymosis, together with an albuminous degeneration of the parenchymatous organs, and in some, in which death was retarded, a mixed form of pneumonia was seen. I have as yet never seen a case of the cutaneous form, the forms seen being of a pneumo-enteric bacteremia.

Various forms of treatment of the sick animals have been tried, including sod. cacodylate and sol. iodine, bacterins and normal serum, but the treatment has been a waste of time in my experience.

Prophylactic treatment, however, has been followed by very successful and encouraging results. This is accomplished by subcutaneous injections of a sterile suspension of the killed organisms, together with their cultural products. A single treatment usually is sufficient. However, I have met with outbreaks in several herds where a second treatment was necessary.

It appears that this organism is the etiological feature in a fatal form of pneumo-enteritis in young calves. I have observed such a condition in several herds, in which there was evidence of a chronic bronchial pneumonia, complicated with chronic enteritis, running a course of weeks, and even two months, ending finally in death. Autopsy of these animals shows a mixed condition of the lungs from congestion to hepatization, with a hemorrhagic or purulent exudate; the intestines showing a chronic hemorrhagic inflammation, the mucosa considerably thickened and, in some cases, ulcers were noted. Smears from these cases show a mixed infection. In the lungs I have found, besides the bipolaris organism, the usual respiratory flora of cocci, from strep to pneumococci and staphylococci. However, they are probably secondary invaders. In the intestines the bipolar organism was also seen, together with colon and other saprophytic organisms. Experimental inoculations of rabbits with material from these cases have invariably caused death in twenty-four to forty-eight hours, and the usual lesions of hemorrhagic septicemia observed on autopsy. Treatment of these cases has been unsatisfactory. However, here, again, injections of the killed organism into the well individuals of the herd has checked the spread of the disease.

The form encountered in swine has been usually of the pneumonic form chronic in nature and running in course from a few days to weeks. Some cases have shown intestinal lesions and several have shown an acute form, dying in a few hours and showing lesions of septicemia. By far the usual course, as stated above, was of a chronic nature, the symptomatology of which was a chronic cough on exertion, inappetence, emaciation and death. Autopsy showed a mixed pneumonia, of a bronchial and interstitial nature, with a fibrinous or purulent exudate and a fibrinous pleuritis. Bronchial and mediastinal lymph glands hemorrhagic. A simple pericarditis and an ulcerative endocarditis has also been seen in some cases, while in others a myocarditis has been seen. The balance of the organs show the usual lesions of a chronic infectious disease.

No treatment has been successful in these cases, the only procedure that seems of practical use being immunization. I have not had as good results with a straight bipolaris bacterin in these cases as I have had with a mixed bacterin containing a certain percentage of strepto, staphylo, and pneumococci, together with several strains of colon bacilli. Smears from the

lungs of dead animals show that there is always a mixed infection, hence the better results from the use of a mixed bacterin. As the lesions of a mild form of cholera are almost identical, when the kidney petechia are not present (and, as a matter of fact, when they are present as the writer has seen them in hemorrhagic septicemia that cleared up on vaccinating with that specific vaccine only), cholera is sometimes overlooked. This has happened to the writer and only a laboratory diagnosis showed the true state of affairs. It is in such cases that vaccination with the bipolar organism only does not give the results. In these cases the administration of the simultaneous cholera method will invariably stop the losses.

In conclusion, I will say that in the last few years we have learned a good deal about these infections, but there is still much to be cleared up before we can really say that we understand it in every detail.

THE SWINE DISEASE SITUATION.*

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There is no other subject confronting the practitioner that is more debatable or confusing at the present time than ailments of swine. There are reports from various parts of the country concerning new or heretofore unknown diseases, and veterinarians should be very careful in rendering a diagnosis in such cases, and especially in applying some specific name. Our conception of what certain specific diseases actually are necessarily undergoes a change from time to time, which leads to confusion rather than a clarification of the situation, unless based upon reliable and confirmed investigations.

With the possible exception of the condition called by some "Influenza of Swine," concerning which I have no definite knowledge either from a pathological or etiological standpoint, and which is not considered in this paper, I wish to point out that we have not met with anything new, neither have we found any pathological changes which have not been observed for the last thirty-five or forty years. We are simply obscuring our own vision and allowing ourselves to be misled into paths of confusion and bewilderment by accepting every proposed new classification or name.

* Read before Iowa Veterinary Association, January 23, 1919.

In 1878 Congress appropriated ten thousand dollars, being its first, for the investigation of swine diseases. The 1885 Report of the Bureau of Animal Industry in reporting swine plague (hog cholera) says that "for about three feet from the valve (ileo cæcal) the entire mucosa of the ileum was necrosed, stained yellowish and could be scraped off." In the cæcum "the mucous membrane came aways in lots." In transmitting the report in 1889 of work done by Salmon and Smith, Salmon says: "It has been dscovered in the course of these investigations that there are two very different and distinct epizootic diseases of swine in this country which are widely prevalent, and which had previously been spoken of under the one name of hog cholera or swine plague. These two names had, therefore, been used synonymously previous to 1886, when the differences between the diseases were pointed out in the reports of this Bureau. It was then deemed best to apply the term hog cholera to that disease in which the intestines were found most affected."

This same report in describing the lesions of hog cholera says: "In some cases the necrosis, instead of appearing in circumscribed ulcers from one-sixteenth to one-half inch or more across, involves the whole surface of the mucosa, giving it the appearance of a so-called diphtheritic membrane. In such cases the walls of the intestine are very much thickened and so friable as to be easily torn with the forceps in handling. Such necrosis is rare in spontaneous cases, but it quite invariably appears in animals which have been fed with pure cultures of hog cholera bacilli."

The distribution of the ulcers varies but slightly. They appear most frequently in the cæcum and on the ileo-cæcal valve, as well as in the upper half of the colon. The lower half is implicated in severe cases only, and then less extensively.

In this report, which was issued thirty years ago, we find accurately described every condition we are able to find today. When the discovery of hog cholera virus was announced in 1903 a basis for the scientific, systematic control of the disease was laid and our conception of hog cholera was revised. The development of hog cholera serum was the logical result. This illustrates the futility of attempting classification and suggesting specific prevention or treatment of infectious diseases unless and until the specific cause can be definitely established, as a knowledge of the cause of a disease affords not only a sound but the only basis of successful prevention and rational treatment.

The discovery of the virus also led to the conclusion and suggestion by some authorities that intestinal and pulmonary lesions were secondary and that they were of no significance if the virus could be controlled. Thus followed the period when hog cholera was regarded as the only disease of importance among swine. In the past few years, however, we have found that the so-called secondary conditions, although not uncommonly associated with hog cholera, may and frequently do exist independently, as they probably have for a half century or more. As a result of this development the disease characterized by lesions produced by *B. suispestifer*, already referred to, was left without a name. Salmonellosis has been suggested, but very fortunately is not being adopted, as it has nothing to recommend it. Necrobacillosis is now quite generally used for the necrotic or diphtheritic enteritis. This name, in some cases, may be correct, but is absolutely wrong when the condition is caused by organisms other than *B. necrophorus*, as has been found by numerous investigators. In some European investigations there is quite constantly found an organism closely related to, if not the same as *B. suispestifer*, and the disease, which so far as can be ascertained is similar to the diphtheritic condition of the intestine found here, is called pig typhus. Others have found other organisms, among which are *B. necrophorus*. Much work still remains to be done before we can state whether the disease has one specific or several causative agents. Until research laboratories are able to clarify the etiology, let us "keep our feet on the ground," as we are dealing with conditions that have existed before many of us were old enough to show an interest in diseases of any kind. In fact, reports issued from 1885-1889 contain some of the finest descriptions and color plates of conditions exactly as we find them today that can be found anywhere.

The first and most important fact practitioners should determine in all cases is whether hog cholera virus is actually present. We should be very certain that virus is not present before the owner is advised that his hogs are not suffering from hog cholera and serum will do no good. The tendency a few years ago was to call everything hog cholera. At present it is in the opposite direction, the favorite names being diphtheritic or necrotic enteritis (necrobacillosis) and "Flu." The mixed infection bacterin propaganda put on by commercial concerns has helped to bring on the present situation.

In view of the fact that the lesions produced by organisms other than hog cholera virus in outbreaks of hog cholera may exist as independent diseases in cases where the virus has not been present and further that the above facts are becoming generally recognized by the veterinary profession, we should consider that the situation, according to our knowledge today, suggests the following:

(a) Hog cholera caused by a filterable virus. When uncomplicated, lesions are almost exclusively of a hemorrhagic nature and frequently very few lesions are present. Its course is acute and there is no known cure. It is by far the most contagious and fatal disease we have among swine, but can be effectually prevented by properly prepared and carefully administered serum. One attack or proper serum-virus treatment confers durable immunity.

(b) Diphtheritic or necrotic enteritis (pseudo hog cholera, pig typhus, para typhus of hogs, bacillary hog cholera, necrobacillosis, salmonellosis, etc.), which in the light of our present knowledge may be caused by one or more of the following organisms:

1. *B. suispestifer*. Salmon and Smith.
2. *B. enteriditis*. Gartner.
3. *B. coli*.
4. *B. typhi suis*. Glasser.
5. *B. voldagsen*. Damman and Stedefeder.
6. *B. necrophorus*.

The lesions are those particularly emphasized and regarded as most characteristic by Salmon and Smith in describing the disease named by them "Hog-Cholera." At present since the name hog cholera has been appropriated for the disease caused by the virus it is erroneously very commonly called necrobacillosis.

It is most frequently found in herds where some disease, condition of nutrition or other influence has caused a reduction in vitality and consequent decreased resistance of tissues. We are not certain, however, that this is always necessary. Experience in many cases seems to indicate that it is not. There may be localized inflammatory œdema in the early stages. Later, however, the changes most often seen are localized ulcers covered with diphtheritic membranes, usually in the cæcum. In some cases the process may extend to a large section of the lower portion of the small intestine and the upper portion of the large.

The wall may become thickened and the intestine resemble in form a piece of garden hose.

(c) Swine plague. This disease, usually pulmonary in form, is caused by *B. suis* septicus. As a primary disease it most frequently occurs sporadically and only occasionally may become enzootic. While practically all forms of pneumonia may be found in hogs, *i. e.*, catarrhal, croupous, necrotic, verminous, etc., most cases could probably safely be placed under swine plague which lost the highly contagious character formerly attributed to it when hog cholera virus was discovered to be present in the extensive outbreaks. I believe that the prevalence of a highly acute disease caused by this organism, which some prefer to call hemorrhagic septicemia, is very much exaggerated.

Several other organisms, such as streptococci, staphylococci, *Bacillus coli*, *Bacillus pyocyaneus* and, in a large percentage of cases, *Bacillus pyogenes suis* are found. Under favorable conditions any of the above may produce pneumonia which cannot be distinguished in most cases from the disease caused by *B. suis* septicus or what is known as swine plague. We must remember, however, that the simple finding of an organism does not establish it as an etiological factor. Some, in fact, may be found in healthy hogs. This is especially true of the bipolar organisms. Whether we shall call this condition swine plague, hemorrhagic septicemia or still some other name, let us not change until we are certain that we have an improvement, that the name is applicable to the condition and carries a significance to the user thereof.

Both of the latter diseases and (c)—are most frequently found associated with hog cholera because the invasion of the body by a filterable virus predisposes it to secondary infection and in many cases the symptoms and lesions of the primary disease are obscured. There is, therefore, according to this conception, no intestinal or pectoral form of hog cholera, and probably few cases, if any, of chronic hog cholera. The inflammatory necrotic conditions in the pulmonary and digestive organs are distinct diseases and should be regarded as such whether complicating hog cholera or not.

TICK ERADICATION PLANS FOR 1919.*

J. R. MOHLER,
Chief of the Bureau of Animal Industry.

*Mr. Chairman, Fellow Employees of the Bureau
of Animal Industry and Friends:*

Since coming into this gathering of those so vitally interested in tick eradication, my mind has reverted to a somewhat similar but decidedly smaller meeting which was held at Richmond, Va., in the fall of 1905. The occasion was the annual convention of the Southern Commissioners of Agriculture, and the audience consisted of less than two score men. I was afforded the privilege of choosing for my topic whatever subject I considered the chief prerequisite in tick eradication and I selected the title "The Education of the Owner of Ticky Cattle." In those days men like one of the late Senators of South Carolina thought tick eradication was ridiculous and on one occasion while visiting Clemson College he said his grandfather's cattle had ticks, his father's cattle had ticks, and his own cattle had ticks, and if they were harmful he would have found it out ere this. However, long before this able man died he was an ardent tick eradicator and the State which so signally honored him was taken out of Federal quarantine, as you all know, on the first of last December.

It is a long, tortuous trail from those early days to the present and it has been one of constant effort on all our parts to educate, re-educate, and then educate once more.

The conference we are attending this week would fall far short of its purpose unless while meeting here we got renewed spirit from past achievements to surmount the obstacles that remain before American soil will be freed forever from the cattle fever tick. It would not be worth while unless every one of us carries away with him a clear idea of what we plan to do this year and a determination to do his full part.

There is no man in this meeting who cannot be proud, now and hereafter, of his share in the fight against the tick. You are doing a constructive work that has met with phenomenal success, especially in recent years, and in the first years as well, considering the prejudice and ignorance that had to be combated at that

*Address at conference of B. A. I. Employees, New Orleans, Feb. 11, 1919.

time. The work that has been done is its own argument, and the effort that remains is amply justified by the benefits from past accomplishments.

When the work is finally completed, when the tick has been permanently eradicated, you will have erected your own monument, and will enjoy the satisfaction of knowing that you have done something of real value for your country and the human race.

Few of us have had the privilege to wear the khaki in the world struggle that has just ended in complete victory for the Allies and the United States. It would be presumptuous to think that any American who did not risk his life for his country could have given service comparable to that of the boys who bled and died. But, at the same time, we were all working for our country, and we were all doing work that was essential to victory. It is not too much to believe that had the war stretched several years more, it would have been decided by the reserves of beef that the South possesses as the direct result of tick eradication. Even with our comparatively short participation, the meat that the South was able to produce, because of the absence of the tick, weighed powerfully in the food balance. So, while you wore no uniforms, dipped cattle without the inspiration of brass bands or bugle calls, and performed tasks that might have seemed humdrum when your hearts were "over there," you have done as your country instructed, and no man can do more.

But your work was not for the war alone, and the benefits of it will remain long after the gory horror of autoocracy's downfall will be remembered only for the heroes it produced. You are making the South tick-free, and when you have done that the nation will be your debtor.

Tick eradication in the past two years has made a notable record. In 1917 the 70,754 square miles released from Federal quarantine far surpassed the record of any previous year. Again, in 1918, the release of 79,217 square miles eclipsed all previous accomplishments. These figures would command attention at any time. But they become truly remarkable when we remember that in 1917 and 1918 the United States was at war, and every energy of the American people was bent toward the one aim of whipping the Hun. Many of our Bureau men joined the colors, tens of thousands of men left the farms of the South for the army, it was difficult to ship supplies into this section because of the demands of the cantonments, everything was submerged beneath

the one dominating purpose. But, despite all that, tick eradication in 1917 broke all records, and in 1918 we found that 1917 was nearly 9,000 square miles too slow.

Much of the credit for these record-breaking accomplishments belongs to you, the representatives of the Federal Government in the fight against the tick. But we should be vain and foolish if we tried to appropriate all, or even most, of the credit. We must give full recognition, in the first place, to the coöperative work of the State governments and State agricultural colleges, and the county governments. We must acknowledge the aid of such organizations as the Southern Cattlemen's Association, the Texas Cattle Raisers' Association, the Florida Tick Eradication Committee, the Southern Settlement and Development organization, the Georgia Land Owners' Association, and the Southern Pine Association. We must recognize the consistent and clear-sighted support of the daily and weekly newspapers and the agricultural and live stock journals of the South, without whose aid we might still be battling with prejudice everywhere. And we must give due credit to the associations of the bankers and other business men who have led their communities to a realization of the benefits of tick eradication.

More than that, we must, everyone, take off our hats to the farmers, live stock raisers, and other people, in general, of the South. We must remember that while these people were helping tick eradication, they were not only buying Liberty Bonds, subscribing to the Red Cross and other organizations, and sending their sons to war, but were accomplishing notable things in raising the food crops that were regarded as essential to a strong America. When the slogan, "The South Must Feed Itself," was sounded the farmers of the South answered. Before the war the South imported annually about \$600,000,000 worth of corn, hay, grains, mixed feed, flour, meat and meat products, dairy products, poultry and poultry products, and canned goods. There has been a great change. In 1918 the fifteen Southern States, including all the tick-infested States, produced 141,787,000 bushels more corn than they harvested in 1909. The eleven States comprising the cotton belt produced 135 per cent more wheat in 1918 than in 1909. These same States during the same period increased their oat crop 133 per cent; their hay yield, 128 per cent; Irish potatoes, 117 per cent; and sweet potatoes, 67 per cent. The same tendency is shown in live stock production. As an instance, in 1914 Mississippi marketed only 86,229 fat cattle,

while in 1916 it shipped 156,237 animals to the St. Louis market, an increase of 181 per cent.

When we look back over what has been done, and consider that we are sure of the increasingly strong support of the Southern people who have done such great things, there is no reason whatever to fear that tick eradication will not win the most complete success, and that through tick eradication the South will become the live stock section that it should be by reason of its climate and other natural advantages.

The achievements of past years, however, now are history. We have met here to plan the 1919 campaign. My notion of what should be done this year, what must be done, and what will be done, is this:

Make 1919 the worst year for the tick.

It can be done. There are no can'ts in this fight. Tick eradication is well past the half-way mark, and it is at high tide. Unscrupulous politicians who formerly waved the dipping vat as a red flag are now finding that the dipping vat is a mighty good band wagon to climb on. Cattlemen who still oppose tick eradication are learning every day that their attitude is taking money out of their pockets. They, too, are seeing the light. I do not know of a leading man in any community who is against the campaign that has been proved beneficial by practical results in dollars and cents.

With the new State-wide compulsory dipping law in Texas, which becomes effective in the last zone of that State in 1922, it is not beyond reason to hope that the Federal quarantine can be entirely lifted from American territory at the end of 1923. We may regard "A Tick-Free South in 1923," as our aim. But to realize that aim, remember that the area still under quarantine is 270,036 square miles. The campaign must not be allowed to lag in any year and we should start off this year by setting up another record. Judging by what has been done in 1917 and 1918, I believe we can set the pace by cleaning up more than 90,000 square miles in 1919. That will "Make 1919 the Worst Year for the Tick."

The total number of cattle dipped in the South Texas counties during January, 1919, was 1,033 herds, comprising 43,213 cattle. A total of 17,983 cattle, or 286 herds, underwent systematic dipping, while the remainder, or 747 herds, including 25,230 cattle, received preliminary dipping.

CLINICAL AND CASE REPORTS.

ECONOMICAL TANK FOR AIR TREATMENT OF PARTURIENT PARESIS.

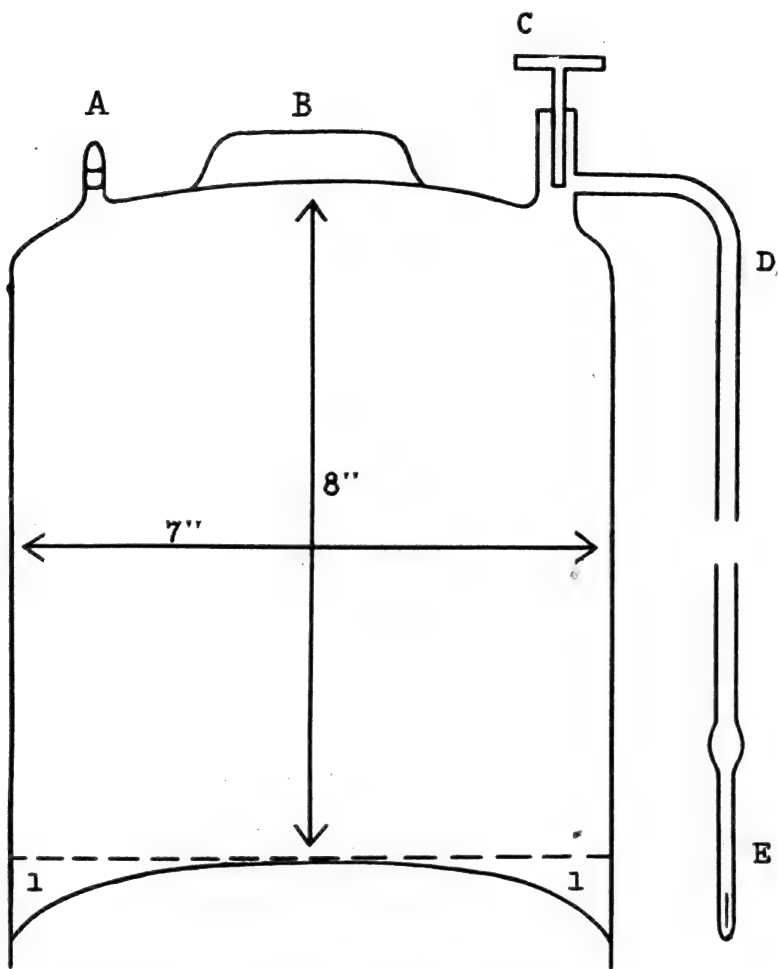
I. D. WILSON, College Station, Pa.

In treating parturient paresis with the ordinary air pump apparatus, the writer has experienced occasional cases of mastitis following the treatment, even when the air was filtered through sterile absorbent cotton. Oxygen tanks are expensive and considerable care and expense are involved in having them refilled.

This led to the contrivance of the tank herewith illustrated. This tank can be made by any tinsmith with but little expense. It is filled with the ordinary automobile tire pump and when pumped up to sixty pounds pressure (determined by tire gauge) holds enough air for two ordinary sized cows. Before filling with air, however, the plunger from the intake valve is removed and about six ounces of 70 per cent alcohol or some other suitable antiseptic is poured into the tank. After the tank has been filled with air to sixty pounds pressure (more or less depending upon the weight of the material used in the construction of the tank) if it is to be used at once, it should be thoroughly shaken, which causes the antiseptic in the tank to wash the air, thereby rendering it sterile. If the air in the tank is not to be used at once all that is necessary is to set it away, allowing sufficient time for the bacteria-laden dust particles to settle into the antiseptic in the bottom of the tank. The rubber tube leading from the tank to the teat tube and the teat tube should be sterilized by boiling before use, or when this is impossible by inverting the tank and opening the needle valve a small amount of antiseptic will be sprayed out through the rubber and teat tubes, rendering them sterile if the proper antiseptic is used in the tank.

The advantages of this apparatus may be summed up as follows:

1. Sterile air is provided.
2. Convenient and inexpensive to use.
3. Does not suggest to the laity to "rig up" the bicycle or automobile pump to treat their own cases.



- A. Automobile tire valve (inflow)
B. Handle.
C. Valve from gas fixture (outflow)
D. Rubber tubing three or four feet long.
E. Teat tube.
1. Antiseptic level.

SOME EXPERIENCES OBTAINED FROM CONTACT WITH TUBERCULOSIS.

G. E. JORGENSEN,
Assistant State Veterinarian,
Clermont, Iowa.

It is the intention of the writer to present a general review of the pathology and bacteriology of tuberculosis, basing this review upon four years of experimental work with this organism. The purpose for which this discourse is intended is to recall the attention of the profession to one of the most destructive diseases that we have to deal with. This article will be presented in form of a series of case reports.

CASE NO. 1.

Was called to see a cow that was ill in the pasture. History showed that two other cows had been afflicted with a similar condition and died. This cow had been ailing for one week. Before being taken ill, the owner claimed, this cow was the fattest and nicest cow he had. Examination showed in the animal the last stages of what appeared clinically as a septic infection, together with an unusual emaciation. Prognosis unfavorable and slaughter advised in order to determine by an autopsy what the true cause was. This was done and revealed an acute general tuberculosis, involving every organ and tissue except the bone. Every lymph gland showed involvement, as did the mammary gland, in the right anterior and posterior quarters. Smears made from lesions in lungs, liver, mesentery and inguinal lymph glands and from post-mammary gland all showed the *B. tuberculosis* when stained by the usual acid-fast method. Transfers from the lesions in the lungs and mammary gland showed no growth on any of the usual media, except the egg method^a as prepared according to Dorset's method. Upon this material a few tiny colonies appeared in ten days. Pure cultures were obtained from mammary gland, but from the lung a mixed growth was obtained containing pus cocci, etc.

After several attempts a few colonies developed from milk from the two quarters showing no affection whatever. These proved to be *B. tuberculosis*. This proves that the mammary gland does not need to be infected in order to be dangerous. In other words, the *B. tuberculosis* seems to be able, by metastasis,

to be present in the milk in apparently healthy glands. By passing the organism here isolated through two different rabbits an organism was isolated that grew very readily on most culture media containing glycerin. When inoculated into fowl the lesions typical of tuberculosis developed locally, later causing death by a gradual emaciation. It was not possible to demonstrate the organism from lesions in the fowl. Later, when the remainder of the animals in this herd were subjected to the tuberculin test, three others reacted, of which one, on slaughter, was found to be so bad that she was tanked at the slaughter house.

CASE NO. 2.

Was called to treat two cows suffering from a form of diarrhoea that resembled somewhat an infection with the *Eimeria bovis*. These cattle were run down so that hardly anything remained but the bony skeleton. They were constantly passing fetid, blood-stained liquid and refused absolutely to eat. Microscopic examination of the feces for the presence of the coccidiosis parasite was negative, but an acid-fast stain showed a small red bacillus. Fearing that I was dealing with an infection with the *B. paratuberculosis*, I tried by animal inoculation and transfers to media to get a pure culture, but the extemporaneous organisms present outgrew the organism searched for, so that I did not succeed, the media being covered in a few days so that no accurate work could be done, and I had no "antiformin" to work with, hence gave it up and decided to apply a tuberculin test. The animals both died before this and on post-mortem showed an acute intestinal tuberculosis with involvement of the liver and associated glands. No lesions were found in the lungs of one, but in the other an encapsulated lesion was found in the right ventral lobe. Enlargement of the supramammary glands was seen in both, but only in one was there any lesion, and that was very small. Attempts at demonstrating the organism in smears from the milk or growing it in media were not successful. The tuberculin test showed no others affected. It will be applied again later.

CASE NO. 3.

Was called to see a cow that showed all the clinical symptoms of tuberculosis. I advised her destruction. Post-mortem showed a well-developed case of the disease affecting the lungs, intestines and uterus. Attempts to demonstrate the organism in the milk were unsuccessful and no lesions were seen in the mammary gland or associated lymph glands. A two-month-old fetus was removed

from the uterus and smears made from some of the liquid obtained from the abdominal cavity of this fetus showed *B. tuberculosis*. I will add, however, that there may have been a break in my technique, so that I may have infected my material from accidental contact with the infected uterus. I say this in order that no incorrect conclusions may be made. So I simply say that it is possible that the fetus was infected. Testing the remainder of the herd, I found no other cases. However, this fall while posting several hogs dead on this place from cholera I found tubercular infections in the submaxillary, pharyngeal and prepectoral glands of several animals, showing that there is still some of the animals that did not react then that are affected, as these hogs have no outside way of becoming infected.

CASE NO. 4.

Was consulted with reference to a disease in chickens that was proving fatal to a number of them on this farm. I suspected a *B. avisepticus* infection and advised vaccination. Autopsy on two showed that I had guessed wrong and that I had a case of avian tuberculosis. These chickens had all been hatched out with an incubator and were in new, clean quarters, hence I concluded that it was not a case where an old tubercular infection was present. Microscopic examination showed a tubercular organism characteristic in morphology of the bovine organism. That following winter I tested the cattle on this place and we had three reactors. Apparently we here had an avian infection from a bovine origin. The more I study this organism the more I am inclined to believe that the different species are so closely allied that they may be regarded as one, and that the different characteristics—cultural and morphological—are simply due to the different environment of the different hosts.

Another thing that becomes apparent the more this disease is studied is the insidiousness of its character. It is like a prowling murderer at night—slower, perhaps, but as dangerous—and to man and beast alike. Its presence is discovered where least expected. If it were manifested by more violent and eruptive symptoms, as are some of our other infectious diseases, it would be less dangerous, for then public attention would demand its suppression. As it is, thousands of dollars are lost each year through its ravages, and many a human being is predestined to a life of suffering and an untimely death. Especially is this true among little children who are fed upon unpasteurized milk, as

they are in this community and many other localities. While a medical student in Chicago the writer was connected with the Cook County Hospital and there has been many a little fellow hobbling along on crutches or trussed down in bed with a weight suspended from head and feet and on looking over the history sheet one invariably reads "T. B. Hip" or "T. B. Spine," etc., all from the poorer sections of the city where cheaper grades of milk are used, or were used at that time. It can not be disputed that the B. A. I. work and "Accredited Herd System" are doing a lot of good. However, what we need is Federal legislation that will make it compulsory to destroy or isolate tubercular animals. The writer has studied this disease from every angle since graduation, has preached the doctrine of eradication to the laity and from the experience obtained is of the opinion that, while many stock-raisers will take advantage of the system recently adopted, there are a good many who will not voluntarily do so, and as long as a certain percentage keep tubercular animals it will be impossible to eradicate it. Suppose that in 1914 foot-and-mouth disease was eradicated from those farms only where the owner was willing to have this done; then we would still have this disease with us. If the method adopted with foot-and-mouth disease is too drastic, then why not adopt the Bang or palliative method and destroy only clinical cases and isolate non-clinical cases from the herd and progeny and feed the calves on sterilized milk only? In this way results would finally be obtained. It is to be hoped and prayed for that some time in the near future we may be provided with a method that will arrest the further progress of this disease, which, as Moore says, "does not destroy life by acute toxemia, but by a chronic and long-continued systemic poisoning and by morbid changes brought about by the localization of the lesions in the organs necessary to life."

TETANUS IN A COW FOLLOWING RETENTION OF THE PLACENTA.

E. MORGAN, M. R. C. V. S., D. V. H.,
Puerto Cabello.

HISTORY.

A criolla cow which had calved a strong, healthy calf at the expected time. The owner was a carter (I mention his vocation because I consider it might have some connection with the cause of this particular case). He called to see me one day, saying that

his cow had calved about twelve days previously, that part of the cleansing was still retained, and that the animal was off feed since the day before, but previous to that she was eating well. He asked if I would give him a cleansing drink for the cow. Also he informed me that on various occasions he had removed parts of the cleansing. I gave him a drench whose basis was mag. sulph., as I understood that the cow required an aperient.

The following day I met the owner, who informed me that the cow was somewhat worse, and that he found it impossible to administer the medicine, as they could not open the animal's mouth, in spite of several attempts, and that she was unable to drink, although appearing at times to be anxious to do so. On hearing this, I questioned him more minutely, as it seemed strange that retention of the placenta caused such hindrance to the animal.

I arranged to see the cow the following day. Next morning early, while standing in front of my office, I could see a cow in the distance coming towards me, being led by two dames. The movements resembled those of a bovine animal affected with "Sturdy," or "Gid," yet there was some particular difference, inasmuch as the tail now and again was held up, and sideways, also the limbs were not bent at the joints, but moved in a stiff manner. There was slight tympany, and on approaching the cow, her convulsions or spasms came on. The body was moist with perspiration, although imperceptible to the eye. The muscles of the jaws and neck were quite tense; the jaws completely fixed; the muscles of the limbs were quite rigid. The head was raised upward, and immediately the eyeballs retracted, with protrusion of the "haw," or *membrana nictitans*. The muscles of the extremities were more rigid than those of the abdominal wall.

DIAGNOSIS.

Owner was informed that the cow had tetanus, and that she should have been kept quiet instead of parading her through the town; also that the outlook was not very bright. The owner then quoted many cases of mules which were cured by rubbing the region of the jaws with turpentine and the body with fish-oil, and asked, "Would I have any objections to let him try this treatment until next day?" Knowing the Venezuelan character fairly well, and whether I said "Yes" or "No" he would all the same carry out his own treatment; also, seeing that he considered tetanus a mild and curable disease, I answered decidedly, "Yes; try."

Next morning the owner came with a smile on his face, stating that the cow had managed, with great difficulty, to sip two large bucketfuls of water just before he left. He returned in the afternoon, however, with the information that the cow had dropped dead after drinking the water, and that prior to dropping down she had swollen "like a toad does at the approach of a steam-roller."

He had also made, as he thought, a very careful autopsy, but all he found abnormal was in the uterus and vagina, where there was a quantity of sanguino-purulent fœtid matter; also that the udder contained a great quantity of milk.

REMARKS.

The owner during this period was hauling surface earth from a field nearby to make a garden. Every day he had been attempting to remove the cleansing and only used a little grease on his hands, without any antiseptics whatever. Needless to say, he never attempted to wash his hands prior to manipulating the placenta inside the vagina. I have no doubt in my mind that in the first place tetanus in this cow was due to retention of the placenta, but whether the germs gained entrance by means of the carter's hands, which is most probable, or were inoculated from others sources, cannot be definitely stated.

Tetanus is most prevalent amongst horses and mules in Venezuela, but this is the first case I have yet witnessed among cattle.

Again, if we take the animals in general, this channel of infection is not considered a very common one for the tetanus germs to enter.

The drinking of a large quantity of water caused tympanitis, and some of the fluid might have entered the trachea as well. However, there seems little doubt that the water hurried matters to an abrupt ending.

Tetanus in ruminants is more serious even than in other animals, on account of the mechanism of rumination being thrown out of gear, with bad results.

In treating the disease in the bovine, it would be wise to make use of the trocar and canula to relieve the rumen of the accumulated gas, and therefore relieve pressure on several of the most vital internal organs, besides making use of the canula to introduce medicine directly into the rumen.

ABSTRACTS.

NOTE ON THE COMPARATIVE PATHOLOGY OF INFLUENZA.

GEORGE R. MURRAY, M. D., D. C. L., F. R. C. P.,
Temporary Colonel, A. M. S.; Professor of Systematic Medicine in
the Victoria University of Manchester; Consulting Physician
to the Italian Expeditionary Force.

The comparative pathology of an infective disease is always interesting, and it has in many cases thrown light on the modes of infection in man. During the present pandemic of influenza I have not met with any reference to the occurrence of a similar malady in either domestic or wild animals. It is possible that some animals have been affected, and it would be of interest to ascertain if any localized epidemics of influenza in animals have been observed. The pulmonary complications, as seen this year in man, alike in England, France, and Italy, due to mixed infections of the respiratory organs, so closely resemble those observed in an epidemic in horses which came under my notice more than twenty years ago that a brief account of it may be of interest at the present time. I write entirely from memory, but the main features of the epidemic were as follows:

A certain railway company had a number of valuable horses which were kept in large stables. Two long rows of stalls were arranged in each of the buildings, which were well ventilated and kept in excellent condition. Many of these horses were rapidly attacked by an acute illness with symptoms of nasal catarrh which was accompanied by a clear, watery discharge from the nostrils. The majority of the horses made a good recovery, but some of them developed symptoms of acute pulmonary disease and died. Post-mortem examination by the veterinary surgeons in attendance showed that death was due to acute lobular pneumonia, complicated by pulmonary abscesses which developed in the areas of consolidated lung. A puzzling feature of the epidemic was the irregular distribution of the cases. The malady did not spread in sequence from stall to stall, but cases occurred at irregular distances from each other in the same stable.

As several valuable horses had died and the disease continued to spread, I was asked to investigate the cause of the epidemic and to give advice as to the most suitable means to be adopted

in order to stop the further spread of the infection. On making a bacteriological examination I obtained from the nostrils of horses suffering from the acute nasal catarrh cultures of a small bacillus closely resembling, if not identical with, Pfeiffer's bacillus. The same bacillus was recovered from the patches of broncho-pneumonia, in the lungs of a fatal case. In this case there were several abscesses which had formed in the consolidated areas of the lung. Cultures prepared from the pus in these abscesses yielded growths of staphylococcus albus.

It therefore was evident that the disease was primarily an acute catarrhal infection of the respiratory passages closely resembling influenza in man. In some cases the same bacillus invaded the lung, and broncho-pneumonia supervened. This was complicated by a secondary staphylococcal infection which caused a rapid breaking down of the consolidated lung and the formation of localized abscesses.

In human influenza the usual mode of spread appears to be by aerial convection of the infection to those in the immediate neighborhood of the patient, as was so clearly shown by Major Michael Foster and Major Anstey Cookson in the case of a limited outbreak in a surgical ward. In the epidemic in horses the irregular spread of the disease was apparently due to the use of dry moss litter as bedding, fine particles of which could be seen floating in the air when illuminated by a ray of sunlight. The nasal discharge of an infected horse dripped on to this bedding, where it dried and was carried to all parts of the stable by light currents of air.

The company was advised to remove all the moss litter, and after thorough cleansing to wash out each stable with a disinfectant and to use sanitas sawdust as bedding. This was done in each stable while the horses were out at work, with the result that the epidemic ceased at once and no more horses were lost.

The chief points of interest in this epidemic were the resemblance of the disease to human influenza, the rapidly fatal results of the acute pulmonary complications caused by a double infection of the lung, and the part played by dust in increasing the range of aerial convection from one animal to another. The range of aerial convection in human influenza is usually short, but in the management of patients it is advisable to keep the air of the sick room as clean and as free from dust as possible, and to disinfect all handkerchiefs and spittoons just as in cases of open pulmonary tuberculosis.—*The Lancet*, London.

NOTES REGARDING TICKS FOUND ON FARM ANIMALS IN NEW ZEALAND.

C. J. REAKES,

In Journal of Agriculture, Wellington, New Zealand, 1918,
Feb. 20, Vol. 16, No. 2, pp. 83-86.

The ticks which transmit bovine piroplasmosis in Queensland and North America (*Margaropus (Boophilus) annulatus australis* and *M. annulatus*, respectively), have never been discovered in New Zealand.

The ticks that occur on cattle are *Ixodes ricinus* (commonly called the "dog tick" or "castor bean tick") and a species of *Hæmaphysalis*. Although piroplasmosis or any other serious trouble caused by ticks does not exist among cattle in New Zealand, yet the experience of other countries goes to show that ticks may be the source of trouble to stockowners in the future, inasmuch as they occasion loss of condition, decrease in the milk yield, deterioration in the value of hides, and mortality among animals already weakened by various forms of sickness, insufficient food, or other causes. Measures are thus advised for their eradication. It is recommended that the infested parts of the skin be sprayed with tar, after which all dead ticks should be collected and burned.

Other spraying preparations tried and found to be somewhat less effective consisted of kerosene $\frac{1}{2}$ pint, linseed oil $\frac{1}{2}$ pint, and sulphur 1 ounce; or kerosene 10 ounces, lard 10 ounces, tar 2 ounces, sulphur 1 ounce. Very strong solutions of sheep dips also proved effective, but cattle were liable to suffer from their effects when used at the necessary strength. Dipping is the only effective method available in the case of cattle unaccustomed to handling. As long as tick fever is kept out of New Zealand there will be nothing to fear from the ticks on that score; but if they become too numerous they may cause trouble in ways previously suggested.—*Tropical Veterinary Bulletin*.

PRESENCE OF RABIES VIRUS IN THE SPLEEN.

P. REMLINGER,

Ann. Inst. Pasteur, 1918, Aug., Vol. 32, No. 8, pp. 406-412.

Babes appears to be the only investigator who succeeded in transmitting rabies by the inoculation of material from the spleen; the spleen of one rabbit out of six experimented on in

this way proved virulent. Nevertheless, the presence of inflammatory and sometimes even necrotic nodules in the spleen in certain cases of rabies in man and other animals led this author to believe that the organ harbored in some cases the virus, which might thus set up lesions analagous to those found in the nervous centers. With this exception, all the observations described in medical literature disclose negative results.

Remlinger carried out a series of experiments with the spleens of guinea pigs that had succumbed to rabies, in a manner similar to that described in his previous contributions to the study of rabies. From these experiments he considers himself justified in concluding that the rabies virus may be encountered much more frequently in the spleen than has been hitherto recognized. Its presence was revealed eight times in the course of forty-two experiments and was proved to be quite independent of post-mortem generalization, inasmuch as twelve guinea pigs slaughtered just before death would have naturally taken place furnished three positive results. This result must be attributed apparently to the fact that the virus may be found much more frequently in the blood than writers have admitted. Marie (A.) has already drawn attention to this point, which the author proposes to investigate afresh. Instead of tending to favor the diffusion of the virus in the spleen, the onset of putrefaction seems in the first place to render it less frequently discoverable (spleens of animals sacrificed before natural death—3 positive in 12 experiments; spleens of animals post-mortemed within 12 hours after death—3 positive results in 12 experiments; spleens of animals post-mortemed at longer intervals than 24 hours after death—2 positive results in 18 experiments).

A comparison of these results is, however, somewhat illusory on account of the fact that it is impossible to resort to sub-dural inoculation after the onset of putrefaction, and the infection following on intramuscular inoculation is of an appreciably lesser degree of severity.—*Ibid.*

POLYVALENT SERUM OF LECLAINCHE AND VALLEE IN THE TREATMENT OF CANINE DISTEMPER.

Bresson gives an account of this in the *Revue générale de Médecine Vétérinaire* for 1917. His view of distemper is as follows. In veterinary pathology, distemper is perhaps the type of infections in which the secondary action of common microbial

agents exceeds in gravity the primary action of the specific agents. The filtering virus of Carré, the causal agent of distemper, appears, when alone, to be easily tolerated by the animal. The clinical signs, the serious symptoms, and the mortal lesions observed in this disease are caused by the ordinary microbes of suppuration (*Streptococci*, *staphylococci*, etc.), which discharge their pathogenic rôle secondarily, by favor of the effects of the filtering virus. For this reason, leaving on one side all symptomatic treatment, the management of distemper is reduced to combating and preventing the secondary action of pyogenic microbes.

Starting upon this basis, and proceeding solely upon the principle of the great importance which secondary pyogenic infection possesses in distemper, the author, upon the advice of Leclainche and Vallée, has used the polyvalent serum prepared by these workers. All his distemper cases were treated systematically for five days with a daily subcutaneous injection of from 40 c.c. to 50 c.c. of polyvalent serum. Two dogs were treated with intravenous injections of 30 c.c. without any particular result. At the end of five days the dose was reduced to 15 c.c. every two days. The injections were made at different sites (neck, shoulder, flank), and without special antiseptic precautions.

In addition to the serum the author employed the following symptomatic treatment. Upon the entry of the dogs into the infirmary he gave an emetic of syrup of ipecac, and followed this up with tonic injections of caffeine, a milky diet, rice water, powdered carbon, and alcohol.

From his experiences the author concludes that the polyvalent serum, used in massive doses from the time of the appearance of the first symptoms, has preserved the animals from pyogenic complications, and that, used upon animals bearing manifest secondary lesions, it combated the infection by the pyogenic agents causing these lesions, and enabled a large number of such animals to be saved.—W. R. C., in *Veterinary Journal*.

ARMY VETERINARY SERVICE.

First Lieutenant W. K. Herbott of the 77th Field Artillery, American Expeditionary Force, in sending in his dues to the Secretary, writes as follows: "Please excuse my delay in sending in my dues. When I received the notice I was up in the Sepsarges woods, northwest of Verdun, and it was almost impossible to secure a money order. Shell fire was intense at all times and one didn't go on many unofficial errands. While I have missed several of the Journals, the October and November numbers reached me all right and I certainly enjoy them thoroughly."

Dr. Warren E. Heath of Columbus, Montana, a member of the A. V. M. A., is a captain in Battery D, 340th Field Artillery, American Expeditionary Forces in France.

"ROYAL" ARMY VETERINARY CORPS.

His Majesty's approval of the prefix "Royal" to the title of the Army Veterinary Corps marks a distinct advance in the status of the military side of the veterinary profession; and, inasmuch as by far the greater bulk of the A. V. C. is at present composed of civilian practitioners with temporary commissions, it is an acknowledgment of the present position of British veterinary science in general. All professions have been afforded an opportunity by the war to prove their worth, and the veterinary profession has responded manfully. Quite recently Major General Sir Frederick Smith made public some of the work which has been done by the British A. V. C., and it is gratifying to learn from other sources that the French and American Veterinary Corps have acquired much from British methods. The organization of the corps has been perfected under war conditions, and hospitals have been erected and equipped at the various fronts in a manner that has called forth unstinted praise. It is announced that in regard to the animals treated at the convalescent depots on the Western front, recent figures show that 72 per cent have been evacuated to the Remount Department for re-issue to the front. The percentage of discharged animals has been higher than this, but after four years of war the age of the animals has had its effect on the number of patients judged fit for further active service. As in all previous campaigns, contagious diseases have accounted for a large proportion of admissions to hospital; these, however, have been so successfully dealt with that contagious diseases of all kinds were responsible for less loss at the time of signing of the armistice than at any other period of the war.—*The Lancet*, London.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Moore has appointed Major Charles E. Cotton a member of the Committee on Resolutions to succeed the late Dr. S. H. Ward.

SECRETARY'S OFFICE.

The Secretary's office is naturally the one that handles the usual business of the A. V. M. A. and the Secretary is always glad to assist members of the Association in every way possible.

Recently a member wrote that he had taken a state board examination several months ago and was unable to learn the results, nor had he received a reply to his letter of inquiry. This matter was taken up and a prompt reply obtained.

The Secretary wishes he was in a position to give every member "a mule and forty acres," but, unfortunately, our financial circumstances do not permit. Some requests we do not feel are within our province, particularly those having to do with individual transfers or promotions in the government service.

Recently a request that the A. V. M. A. inaugurate legislation that would permit veterinarians who had been in the army service to secure a license to practice in any state without passing the state examination upon the payment of the regular fee. This matter was referred to the Committee on Legislation. Chairman W. Horace Hoskins replied as follows:

"The committee are unanimous in their decision that such legislation is not feasible, and so in conflict with state rights that it would be unwise to advocate the same."

OTHER ASSOCIATIONS.

UTAH VETERINARY MEDICAL ASSOCIATION.

At a meeting of the Utah Veterinary Medical Association, held some time ago, the following officers were elected:

President—Dr. W. A. Stephenson.

Vice President—Dr. Bundy.

Secretary-Treasurer—Dr. Hugh Hurst.

H. J. FREDERICK.

MISSISSIPPI VALLEY VETERINARY MEDICAL ASSOCIATION.

The mid-winter meeting of the Mississippi Valley Veterinary Medical Association was held at Galesburg, Illinois, January 24, 1919.

Practicing veterinarians from within a wide radius of Galesburg made up a large and representative attendance. Dr. D. M. Campbell of the Legislative Committee of the Illinois Veterinary Medical Association substituted for State Veterinarian Peters and ably and lucidly explained veterinary practice legislation now pending before the Illinois Legislature.

The following interesting programme was presented:

"Better Coöperation Among Veterinarians," Dr. G. B. Munger, Bureau of Animal Industry veterinary inspector, Rock Island District.

"Swine Plague in Swine," Dr. H. R. Schwarze, State Bacteriologist, Springfield.

"Influenza in Horses," Dr. W. G. Neilson, Monmouth.

"Hemorrhagic Septicemia in Bovines," Dr. James McDonald, Bureau of Animal Industry inspector in charge of Illinois.

"Various Methods in Tuberculin Testing," Dr. F. E. Brown, Blandinsville.

"A Short Experience in Army Life," Dr. W. Lester Hollister, Avon.

G. B. MUNGER.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Michigan State Veterinary Medical Association was held in the council chamber of the city hall at Lansing, Michigan, beginning February 4. The first day was devoted largely to the president's address, reports of committees and a discussion of "Diseases of Swine Other Than Cholera" by Dr. J. B. Killum of the Bureau of Animal Industry. Tuesday evening the banquet was held at the Hotel Wentworth. In the absence of Dr. G. W. Dunphy, Dr. N. S. Mayo presided as toastmaster. Among the speakers were Governor Sleeper, Hon. Thos. Read, Speaker of the House of Representatives; Lieutenant Colonel John H. Wilson, of the Canadian Army Veterinary Corps; Lieutenant Runnells, of the Veterinary Division of the Michigan Agricultural College; Mr. H. H. Holliday, President of the Mich-

igan Live Stock Sanitary Commission, and Dr. Newton of Toledo. An unusually interesting and entertaining evening was spent.

On February 5 Colonel Wilson, of London, Ontario, gave an unusually valuable paper on "The Duties of the Veterinarian in the Great Wars, 1914 to 1918." In this paper Colonel Wilson clearly brought out the great importance of the "paper work" in connection with the handling of large numbers of animals in the army, and also showed the excellent work that had been done by the British Veterinary Service, not only in France, but in all other parts of the world where military operations were undertaken. Dr. N. S. Mayo discussed the subject of "Veterinary Advertising." A round table discussion of practical problems that had been met with in practice proved particularly interesting.

Dr. F. W. Chamberlin, of the Veterinary Division of the Agricultural College, was elected president to succeed Dr. A. B. Curtis, who has so ably looked after the affairs of the association during the past year.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The thirty-sixth annual meeting of the Pennsylvania State Veterinary Medical Association was held at the Penn-Harris Hotel at Harrisburg on January 22 and 23.

The meeting was well attended, due in part, no doubt, to the inauguration of the Governor, which was held the day previous to the meeting, and to the fact that ten other associations for the betterment of agriculture held their annual meetings at the same time.

The following program was rendered:

"Purpura Hemorrhagica," B. F. Senseman.

"The Practitioner in the Control of Infectious Diseases," V. A. Moore.

"Live Stock Industry in South America," illustrated, J. H. McNeil.

"Problems Confronting the Live Stock Producer in Pennsylvania," Mr. M. T. Phillips.

"The Progress of Tuberculosis Eradication," J. A. Kiernan.

"Tuberculosis Eradication in Pennsylvania," T. E. Munce.

Discussion by E. S. Deubler, P. E. Quinn, H. W. Turner and H. C. Reynolds.

"Methods for Advancing Pork Production in Pennsylvania,"

H. H. Havner.

Ten minute discussions:

"Field Demonstrations," Mr. P. E. Dougherty.

"Pure Bred Hog Breeders Associations," Mr. J. M. Fry.

"Juvenile Pork Producers," Mr. N. E. Garber.

"Health and Care," E. C. Deubler.

"Hemorrhagic Septicemia, Hog Cholera of Swine," Edw. A. Cahill.

"Hog Cholera Immunization," E. L. Stubbs.

"Practical Surgery: As It Is and As It Should Be," John W. Adams.

"Infectious Abortion and Sterility in Cattle," W. H. Ridge.

"Observations and Results Obtained in Treating Cattle for Sterility," Benjamin Price.

"A Report on the Control of Abortion Disease," G. A. Dick.

Discussion opened by E. S. Deubler, F. A. Marshall, M. E. Patrick and H. W. Barnard.

The following resolutions were unanimously adopted:

Whereas, the live stock industry of this country has assumed unprecedented importance, in that the food products issuing from this source are not keeping pace with the rate of increase of the population of the country, and

Whereas, the encouragement for a greater production of live stock can be fostered by the nation in an effective way by the control and eradication of the diseases that not only cause great loss but also discourage many from engaging in stock raising, and

Whereas, the services of the veterinarians of the Bureau of Animal Industry have materially aided and assisted in the development of the industry to its present state, and their services are indispensable to its future welfare, and

Whereas, the cost of living has continually grown higher and higher and the salaries of many classes have been advanced to meet it, the salaries of the veterinarians of the Bureau of Animal Industry have increased scarcely at all, and

Whereas, the salaries they receive are not commensurate with the high standard of education and efficiency required in their work, therefore be it

Resolved, that the Pennsylvania Veterinary Medical Association go on record as stating that they appreciate the assistance rendered them in Pennsylvania by the Bureau of Animal Industry veterinarians and that they believe the men merit the increase

in salary and classification of services as set forth in the Rainey Bill, and be it further

Resolved, that the secretary of this association be instructed to send a copy of these resolutions to the United States Secretary of Agriculture and to each member of the National Congress from Pennsylvania and urge their support of the Rainey Bill.

For the succeeding year Dr. M. W. Drake was elected president, Drs. F. J. McNeal, B. M. Freed and E. S. Deubler were elected vice presidents, Dr. Thomas Kelly was elected treasurer, Dr. D. E. Hickman was elected corresponding secretary, Dr. I. D. Wilson was elected recording secretary and Drs. H. C. Reynolds, R. C. Gross, E. W. Powell, F. U. Fernsler and M. E. Patrick were elected trustees.

I. D. WILSON,

Recording Secretary.

IOWA VETERINARY ASSOCIATION.

The thirty-first annual meeting of the Iowa Veterinary Association was held at the Veterinary School of Iowa State College at Ames on January 22, 23 and 24, 1919. The interest of the Iowa veterinarians in the meeting may best be shown by the attendance, about 250 veterinarians being present, the largest attendance in the history of the association. Forty applications for membership were favorably acted upon by the association at the business session. The papers presented were timely and interesting, and the discussions lively. One of the features of the meeting was a one-half day session devoted to swine diseases, of which Dr. W. B. Niles of the Bureau of Animal Industry acted as chairman. The following papers were presented at this session:

"The Swine Disease Situation," C. H. Stange, Ames.

"Secondary Invaders and Their Relation to the Filterable Virus," G. A. Johnson, Sioux City.

"Observation of the Dissemination of Hog Cholera by Insects" (M. Dorset, C. N. McBride, W. B. Niles, J. H. Rietz), J. H. Rietz, Ames.

Reports on the Use of Mixed Infection Bacterins in Swine Diseases," G. A. Scott, Waterloo.

"Obstetrical Practice in Swine," C. G. Moore, Toledo.

A paper by Dr. J. H. McLeod, former mayor of Charles City, Iowa, on the necessity for municipal meat inspection service was well received and showed the opportunity open in this field of service for the veterinarian. Considerable discussion was carried

on regarding the proper use of the various biological products following a paper entitled "Immunization Products and Indications for Their Use," by Dr. Chas. Murray of Ames.

Very interesting papers were presented by Dr. F. M. Maxfield, Tama, Iowa, on "The Army's Fly Campaign" and by Dr. W. P. Bossenberger, Williams, Iowa, on "Malignant Edema."

The reports of the various standing committees on diseases and treatment, sanitation, therapeutics, surgery, legislation, and necrology were very interesting and showed the results of time and thought on the part of the committee chairmen and members.

The forenoon of the third day was devoted largely to demonstrations of breed types and judging of beef and dairy cattle, swine, and draft horses put on by experts from the Animal Husbandry Department of the college.

An excellent clinical program was carried out in the afternoon of the third day, consisting of a number of major and minor operations performed by veterinarians from different parts of the state, as follows: radical poll-evil and fistula operations showing proper and improper drainage, Bemis' nerve-blocking method and tooth extraction, roaring operation in standing position, castration of stallion in standing position, operation for prolapse of rectum, removal of actinomycotic tumor.

Dr. H. S. Murphey demonstrated a new method for operating on scrotal hernia in boar pigs to save the testicle.

A number of cases were presented for diagnosis and for examination during the clinic, among which was a case of paraphimosis in a stallion and a case of salivary fistula into the gut-teral pouch; also some cases showing various conditions of pus gravitation due to improper drainage. Anatomical demonstrations of the parts involved by the use of dissected specimens preceded certain of the major operations.

Considerable time was spent during the business sessions of the association in discussing needed legislation relative to live stock sanitary matters, etc., in which the veterinarian is directly interested.

In the way of entertainment and social diversion, on the first night of the meeting an athletic carnival of wrestling and boxing contests was staged by the college athletic department under the direction of Coach C. W. Mayser, and on the second night a smoker was enjoyed by the members, at which President R. A. Pearson of Iowa State College gave an illustrated talk on European agricultural conditions, and J. W. Coverdale, supervisor of

county agents in Iowa, discussed the relation between the veterinarian and the county agent.

The spirit of good fellowship and coöperation shown by the veterinarians at this meeting, and the interest shown in the papers and discussions, and in each other's problems, augurs well for the future of the veterinary profession. The secretary-treasurer's report showed the association to be in excellent condition financially.

The following officers were elected:

President—Dr. George A. Scott, Waterloo.

First Vice President—Dr. G. G. Miller, Council Bluffs.

Second Vice President—Dr. L. L. Lindsey, Graettinger.

Secretary-Treasurer—Dr. H. D. Bergman, Ames.

Member of Executive Board—Dr. G. A. Johnson, Sioux City.

H. D. BERGMAN, Secretary.

INDIANA STATE VETERINARY MEDICAL ASSOCIATION.

A larger attendance than heretofore was present at the Indiana State Veterinary Medical Association meeting which was held January 8, 9 and 10. About two hundred members and visitors were present.

The business part of the program was taken up during the afternoon of the first day, including reports of the Legislative Committee and Executive Board. This was followed by the election of officers and a few very interesting papers on topics of universal interest.

New officers were elected as follows:

President—Dr. Payson Schwin.

Vice President—Dr. J. Lee Klotz.

Secretary—Dr. G. H. Roberts.

Treasurer—Dr. J. W. Klotz.

The second day was entirely taken up by the literary program. Dean Skinner of the Agricultural Department, Purdue University, kindly consented to give a talk on "What the Veterinarian Should Do During the Reconstruction Period." His advice was most interesting and timely.

Dr. R. C. Julien, the only veterinarian in the United States who gave his time to Y. M. C. A. work in France, and who has just recently returned, gave a splendid talk on "How the American Soldier Helped to Win the War."

The subject "Contagious Abortion in Cows" was taken up by Dr. Ward Giltner and "Sterility in Cows" was taken up by Dr. H. E. Hallman, both of the Michigan State Experiment Station. I assure you these gentlemen handled the subjects in the most up-to-date, scientific and intelligent manner.

Besides the papers mentioned above, the following were presented:

"The Veterinarian of Today and a Decade Ago," Dr. W. J. Armour.

"My Experience in the Treatment of Blackleg in Cattle," Dr. F. E. Kling.

"Coöperation," Dr. L. E. Northrup, State Veterinarian.

"Association," Dr. W. B. Craig.

"Alum," Dr. J. H. Mills.

"Laminitis," Dr. G. M. Funkhouser.

"Proprietary Medicine," Dr. Payson Schwin.

"The Most Common Diseases of Cattle, Symptoms and Treatment," Dr. J. C. Rodger.

"Clinical Notes," Dr. O. A. Nelson.

"Sanitation," Dr. H. E. Whiffing.

"Our Relations in Animal Control Work," Dr. C. H. Hays, Bureau of Animal Industry.

"Lack of Coöperation Among Veterinarians," Dr. A. B. Carter.

"Treatment for Common Colics of the Horse," Dr. O. L. Boor.

"Stomach Worms in Sheep," Dr. George L. Clark.

"Unlocated Lameness Posterior Member," Dr. C. I. Fleming.

The usual number of clinics were presented and more interest was taken in the surgical operations than ever exemplified for a number of years.

G. H. ROBERTS, Secretary.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The sixteenth annual meeting of the Colorado Veterinary Medical Association was held at Denver on January 21. The report of the Secretary stated that there were sixty-eight members in the Association, fourteen of whom had recently been in the service of the United States Army. Death had taken four members, i. e., Drs. A. G. Bocker of Denver, T. N. Slayton of Greeley, H. R. Millard of Cheyenne and E. W. Alkire of Fort Collins. Three of these died of pneumonia following influenza.

The committee on the examining board reported that Dr.

R. H. Bird of Greeley had been selected by Governor Gunter to fill the place left vacant by the death of Dr. A. G. Brocker.

The Legislative Committee reported that five bills of interest to the Association had been introduced in the Legislature. One of these provided for the appointment of county veterinarians where the county commissioners so desired. Another provided for licensing of firms selling hog cholera serum and virus and limiting its use to licensed graduate veterinarians. A third proposed to amend the stallion law by increasing the number of diseases for which horses might be rejected and licensing as grades only such as had one parent registered. A fourth provided for coöperation with the United States Department of Agriculture in control of tuberculosis, and the fifth required the collection of a tax on all horses, cattle and hogs within the State in order to create an emergency fund for use in case of an outbreak of disease. The Association endorsed the three bills providing for county veterinarians, the use of hog cholera virus and tuberculosis control.

The committee on uniform price for the administration of biological preparations made a general report as a result of a questionnaire sent to all members. No definite action was taken.

The new officers were elected as follows:

President—H. E. Kingman.

First Vice President—A. N. Carroll.

Second Vice President—J. F. Meinzer.

Secretary-Treasurer—I. E. Newsom.

Executive Board—A. B. McCapes, T. H. Brady, H. H. Tobin.

New members were elected as follows: John W. Welty, Torrington (Wyoming); Eugene Hover, Lamar; Wm. B. McGuire, Boulder; L. S. McCandless, Craig; Edwin W. McCrone, Littleton; Geo. H. Carr, Brighton; Edgar N. Stout, Monte Vista; Gordon N. Cline, Haxtum; M. E. Spratlin, Littleton; O. S. DeLashmutt, Steamboat Springs; T. E. Traylor, Denver.

Dr. G. W. Stiles, in charge of the Bureau of Animal Industry, Bacteriological Laboratory at Denver, gave a paper outlining the scope of the work and discussing the result of the first year of labor.

The future of racing in Colorado and its influence on the horse industry was discussed by Dr. M. J. Dunleavy, a member of the racing commission. He explained that all race meets in the State are now under the management of the commission and that betting is allowed only under *pari mutuel system*, the proceeds of which go to make up purses for the races.

Hemorrhagic septicemia was covered by a paper read by Dr. A. N. Carroll. This brought out considerable discussion on the disease as seen in the various animals within the State.

Dr. H. E. Kingman reported on the use of copper sulphate in necrotic enteritis in pigs. He intimated that the dose of 2 drams, which was commonly recommended, was too large and that by cutting the dose to one-half to 10 grains for very small pigs good results had been accomplished.

The ever-difficult problem of differential diagnosis of hog cholera was well handled by Dr. John D. Thrower, who exhibited pathological specimens to illustrate his remarks. The discussion was opened by Dr. C. F. Harrington and indulged in by many of the members, and indicated that we were yet far from the solution of this perplexing question. I. E. NEWSOM, Secretary.

KANSAS VETERINARY MEDICAL ASSOCIATION.

In spite of the cold weather and irregularity of train service, the fifteenth annual meeting of the Kansas Veterinary Medical Association, held at Lawrence, Kansas, on January 2 and 3, proved to be one of the very best that the Association has ever held.

The President, Dr. C. B. McClelland, and the local committee had made ample provision for the social part of the program. The Chamber of Commerce kindly loaned their rooms for the place of meeting and also provided the Association with an excellent luncheon. After the luncheon short talks were given by some of the prominent citizens of Lawrence.

The address of welcome was given by the Hon. George L. Kreek, Mayor of Lawrence.

Dr. R. R. Dykstra responded to the address of welcome.

The President's annual address brought out considerable discussion, especially the topic relating to the spreading of knowledge to the non-graduate.

Those presenting papers were:

Dr. A. T. Kinsley, "Hemorrhagic Septicemia."

Dr. E. L. Hackney, "Clinical Diagnosis Between Hemorrhagic Septicemia and Anthrax."

These papers called forth much discussion, which bordered upon the subjects of hog cholera, forage poisoning, botulism, and corn stalk disease.

Dr. L. W. Goss, "Blackleg."

In the discussion of this disease Dr. Kinsley wanted to know the size of the dose recommended by Dr. Goss for the sheep, stating that he had posted three sheep that had died of blackleg in the one flock. Dr. Goss said that very little experimenting had been done by him in the sheep line, but that he thought it would be best to give about the same size dose of aggressin to a sheep as one would give to a calf.

Dr. E. C. Cannon, "Tuberculosis in Live Stock."

The work of the B. A. I. in controlling this disease and the accredited herd and other phases of this disease was freely discussed.

Dr. George M. Potter, "Contagious Abortion."

The manner in which this disease may be spread and the means for the suppression and eradication of this disease was freely discussed. Dr. Kinsley said that in his estimation there was a great possibility of it being carried from an infected herd to a healthy herd by the milk or by-products of the milk. Dr. Potter thought that this means of spreading the disease was very remote, as most of the milk or its by-products were not fed to cattle after the milk or by-products were removed from the original farm.

Mr. H. Umberger, Acting Dean of the Extension Department, and in charge of the county agent work, spoke on the "Relation of the County Agent to the Veterinarian."

Mr. Umberger pointed out that there is a place for both, and if they work in harmony it will be to their mutual benefit. He thought that sometimes petty squabbles arose which were unjustifiable and he was in favor of doing all in his power to have a cordial relationship between both parties.

Dr. Dykstra's paper on "Sterility in Cattle" brought out much discussion along the lines of retained afterbirth, irrigating the uterus, the cost of properly treating a case of sterility, etc. It was thought that in many cases the value of a breeding cow was so close to the price of a beef cow that extensive treatment would not be justifiable. On the other hand, if it were a valuable breeding animal, one whose calf would be worth a big sum, then one would be justified in treating such an animal.

Dr. D. M. Campbell gave an interesting paper on "What I Would Do If I Were a Kansas Practitioner."

The Association gained twenty-seven new members.

The officers for the coming year are:

President—Dr. A. H. Gish.

Secretary-Treasurer—Dr. W. J. Guilfoil.

Executive Committee—Drs. I. G. Wimsatt, G. H. Mydland and B. W. Conrad.

The next meeting will be held at Emporia, Kansas, about January 1, 1920. J. H. BURT, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting (which was also the annual meeting) of the Veterinary Medical Association of New York City was called to order by the Vice President, Dr. T. E. Smith, in the lecture room of Carnegie Laboratory, Wednesday evening, December 4, 1918, at 8:40 o'clock. The minutes of the November meeting were read and approved. Dr. J. F. De Vine of Goshen, New York, who has had an extensive experience and practice with pure-bred animals, and who is himself a breeder of fancy cattle, gave an interesting address on "Animal Breeding."

The Doctor first described the essential points and conformation of a good horse, demonstrating his remarks by an excellent chart. Next in order Dr. De Vine gave a very lucid and interesting description of the good points of a model dairy cow. In demonstrating his remarks the Doctor made use of a large photograph of the Holstein cow "O. K. L. Albina" and dwelt at some length on the proper type and conformation an animal should have to be a good breeder and milk producer.

Dr. De Vine then introduced Mr. Schmidt, the owner of "O. K. L. Albina," who gave an interesting history of this wonderful animal. Stated that in one year she gave over eleven tons of milk, or, to be exact, 22,273.6 pounds, and 962.6 pounds of butter. Said that he bought this animal for \$75 and under the good care given her at his farm she weighed 1,750 pounds before her first calf. Questioned as to how this animal was fed, he stated that she was fed a ration consisting of bran, hominy, oil meal and crushed oats, together with ensilage and beets. The milk tested 3.7%. On the 365th day of her milk test she gave 31 quarts. From four to six weeks after calving is the period of the best production.

Dr. Leo Price of the New York Department of Health then gave an interesting address on "Intradermal and Palpebral Tests for Glanders." The Doctor described these tests in detail and also stated that in 1,200 horses submitted for slaughter for food purposes, 75 were found on test to be glandered.

This being the annual meeting, the reports of all committees and election of officers was next in order.

Dr. Hoskins, Chairman of the Legislative Committee, said that he would endeavor to keep in touch with all legislative action and stated that the ruling of the Comptroller of the War Department regarding the status of the veterinarians in the army would have to be corrected by legislative action. Dr. Gannett stated that Dr. Downing had informed him that undoubtedly there will be a bill introduced in the State Legislature in favor of veterinary dentists.

Dr. R. W. Ellis, Chairman of the Programme Committee, said that they had succeeded in securing several good men as contributors to the programme during the past year and have the promise of others for future meetings.

Dr. Rohrer, Chairman of the Prosecuting Committee, reported progress.

Dr. Hoskins, Chairman of the Committee on Necrology, read resolutions regarding the death of Dr. Gill, which were, on motion regularly made, seconded and carried, ordered adopted, spread in full on the minutes, a copy sent to Dr. Gill's family and to the veterinary publications.

The accounts of the Secretary-Treasurer having been audited by the Auditing Committee, he reported a balance in the treasury of \$74.97. This report was regularly accepted.

The election of officers for the ensuing year then took place and resulted as follows:

Dr. David W. Cochran was unanimously elected President.

Dr. T. E. Smith was unanimously elected Vice President.

Dr. J. E. Crawford was elected Secretary-Treasurer.

From those nominated as Censors the following five gentlemen were elected: Dr. W. H. Hoskins, Dr. W. J. McKinney, Dr. R. S. McKellar, Dr. R. W. Gannett and Dr. T. E. Corwin.

The Secretary requested that a ruling on the question of dues be made, as at present the mode of procedure is unjust to new members joining the Association during the latter part of the year and being compelled to pay a full year's dues. Dr. Hoskins moved that dues be charged at the rate of 25 cents per month from the time of election to membership up to the beginning of the year. Seconded and unanimously carried.

Dr. R. W. Gannett offered the following as an addition to the Code of Ethics, to be known as Article X, viz:

"It shall be deemed a violation of the Code of Ethics for any member to solicit or accept a gift, gratuity or remuneration of any kind from a dealer in animals or his agent as a reward for passing animals for soundness or for recommending their purchase."

Dr. R. W. Ellis moved that a vote of thanks be extended to Drs. De Vine and Price and Mr. Schmidt for their valuable contributions to the program of the evening. Seconded and unanimously carried.

The retiring Secretary was also tendered a vote of thanks for his long term of service.

No further business appearing, the meeting adjourned.

R. S. MACKELLAR, Secretary.

FEBRUARY, 1919, MEETING.

The regular monthly meeting of the V. M. A. of N. Y. City was called to order in the lecture room of Carnegie Laboratory by President Cochran. The minutes of the January meeting were read and approved.

The president read a letter from Dr. Wm. H. Kelly, chairman of the legislative committee of the State Veterinary Medical Association, containing a copy of a bill introduced in both the assembly and senate amending the veterinary law. The new matter in the bill reads as follows:

"Any person who is more than 21 years of age, of good moral character, and who for at least 15 years prior to January 1, 1917, acted as an assistant to a duly licensed veterinary practitioner in the state, shall upon presenting to the State Board of Veterinary Medical Examiners satisfactory proof of these facts, together with a written endorsement by two duly licensed and practicing veterinarians of his knowledge of veterinary medicine, and his capabilities in the practice of the same, receive the recommendation by said board to receive from the regents, on payment of ten dollars, a license to practice veterinary medicine, which license, when duly issued by the regents, shall entitle such person to practice veterinary medicine in this state."

On motion, this bill was referred to the legislative committee.

It was generally moved, seconded and carried that the association as a body is opposed to this bill as special and vicious legislation, the secretary being requested to write Dr. Kelly, informing him of the action of the association.

Under the head of new business, Dr. R. W. Ellis said as this year was the twenty-fifth anniversary of the association, he thought it proper a convention should be held and suggested it be held during the month of June.

The president appointed Drs. Ellis, McKinney and MacKellar as a committee to consider the matter and report to the association.

It was regularly moved, seconded and carried that we hold a smoker and reunion some time during the month of March.

The president appointed Drs. MacKellar, W. I. McKinney and R. W. Ellis as a committee on smoker and reunion, to report at our next meeting.

Dr. Ellis brought up the matter of the identification of horses by the Health Department. He considered the ear tag as unsafe, cruel and unnecessary. Dr. McKinney said he had ear-tagged a number of horses lately with good results and said the manner in which it is done was important. Several others joined in the discussion. The consensus of opinion was that the ear tag should be replaced by some other means of identification by the Health Department.

Dr. Roy W. Gannett handed around a pathological specimen of an infected uterus from a Boston terrier bitch 6 years old, which he had removed before coming to the meeting. Both horns of the uterus were filled with pus.

Dean Hoskins read an instructive paper on "America's Danger in the New World Battle for Food." Dean Hoskins reviewed the appalling destitution that had accompanied the war, and the hunger problems which are sure to follow, unless the nation wakes up to the necessity of conserving the food supplies. He gave some startling facts with regard to agricultural conditions in New York State. He stated that out of 20,000,000 acres of farm land in the state, only 9,000,000 are under cultivation. We have more abandoned, idle and unprofitable farms than any other eastern state. In 1870 there were 5,000,000 sheep in this state, but in 1916 the number had fallen to 400,000. From five to seven million dollars' worth of animals are lost annually in the state from infectious and contagious diseases, which should be prevented by proper control through a system of veterinary sanitary police. The result of these conditions are that fifty per cent of the people of the state are without sufficient nourishment, and statistics showed that twenty-three per cent of the school children of this city are underfed. As a remedy for these conditions,

Dean Hoskins offered two main suggestions. First, that we should establish community abattoirs and food conservation stations. Second, that we should restrict our exports of food products so that the price levels in this country will fall within the reach of the average family. Dean Hoskins estimated that the application of these remedies would reduce the price of food fifty per cent.

This paper brought out a good discussion, which was joined in by Drs. Miller, McKinney, Gannett and others.

Dr. John F. De Vine then gave an interesting talk on "Breeding Problems." The Doctor handled this difficult subject in his well-known interesting and lucid manner and it was thoroughly enjoyed by the members and visitors.

The president mentioned the recent death of two of our members, Dr. F. H. Werner and Dr. Nathan Peyser. He requested the secretary to write a letter of sympathy and condolence to the families of our late brother members.

No further business appearing, the meeting adjourned at 11:30.

J. ELLIOTT CRAWFORD, Secretary.

CENTRAL CANADA VETERINARY ASSOCIATION.

The sixteenth annual meeting of the Central Canada Veterinary Association was held in St. Andrew's Hall, Ottawa, Ontario, on January 16. The meeting was held at this time to allow members to also attend the Ottawa Fat Stock Show and take advantage of the special rates provided by the railways.

The President, Dr. George Hilton, occupied the chair, and the meeting was called to order at 2:30 p. m., when the business of reading the minutes, electing officers, etc., was carried out.

Five new members were initiated into the good graces of the society.

The financial statement showed a fair balance on hand, despite numerous grants throughout the year for patriotic purposes, etc.

Dr. Hilton prefaced the general programme with remarks on the formation of the Advisory Board instituted to supervise and make recommendations for better veterinary education and legislation.

The afternoon session was given up to a discussion of subjects of interest to practicing veterinarians, the following papers being presented:

"Skin Diseases of Domestic Animals," Dr. A. E. James, Ottawa.

Hemorrhagic Septicemia of Cattle," Dr. N. M. Bellamy, Alexandria, Ontario.

"Cathartics in Cattle Practice," Dr. A. R. Metcalfe, Van-kleek Hill, Ontario.

"Remarks on Braxy or Bradsot in Sheep," Dr. A. B. Wickware, Ottawa.

The evening session brought forth some lively discussion relative to legislation, as well as an exposition of the following:

"Tuberculosis in the Dairy Cow," Dr. Higginson, Hawkesbury, Ontario.

"An Illustrated Address on Bots in Horses, Embodying Features of the Life History," Dr. S. Hadwen, Ottawa.

"Hog Cholera," Dr. O. Hall, Ottawa.

"Vaccine Treatment of Contagious Abortion," Dr. J. C. Reid, Ottawa.

All the foregoing papers were handled in a masterly manner, giving evidence of careful and studious consideration.

A number of important resolutions were passed and plans discussed for the holding of a summer clinic.

Dr. C. D. McGilvray, Principal of the Ontario Veterinary College, spoke briefly upon the changes in the curriculum of that institution, and the new system inaugurated for the clinical instruction of students.

Professor Daubigny and Professor Genereux were present as representatives of Lavall University, Montreal, and delivered entertaining addresses, in addition to taking an active part in the general discussions. As a mark of esteem, the above three gentlemen were unanimously elected honorary members of the Association.

Professor A. Dauth and Dr. Etienne were also present as representatives of the Quebec Association, and were accorded a hearty reception.

Dr. Dauth and Dr. Etienne are two of our never-failing sources of welfare and inspiration, and furnish a profundity of practical knowledge, lightened by good humor.

The dinner was held, as usual, between the afternoon and evening sessions, and proved enjoyable in every way. Forty-two members and guests participated, our festive board being graced by the presence of the Rev. J. E. Lindsay, of Ottawa. The entertainment committee provided many surprises, which were thoroughly enjoyed. Mr. Thomas Hamilton entertained with a repertoire of Harry Lauder's songs, being ably accompanied on the

piano by Mr. Hopkins, who also played many charming instrumental selections. The wee drop o' Scotch touched the taste-buds of our canny hie'land members, who audibly emitted gurgling sounds of delight. Mr. David Verner proved a veritable magician in his sleight-of-hand mysticisms, while Mr. Gordon Rogers appeared in his inimitable style in monologues and character sketches.

Many regular attendants were unable to be with us owing to the prevalence of influenza, and expressions of regret for their enforced absence were received, together with their best wishes for a successful meeting. Notwithstanding this unfortunate feature, the meeting was one of the best ever held, and augurs well for the future activities of the Central Canada Veterinary Association.

Officers for the current year were elected as follows:

Honorary President—Dr. F. Torrance, Veterinary Director General.

President—Dr. George Hilton, Ottawa.

Vice President—Dr. C. M. Higginson, Hawkesbury, Ontario.

Secretary-Treasurer—Dr. A. B. Wickware, Ottawa.

Council Members—Dr. Marriott, Dr. Hall, Dr. Hollingsworth, Dr. Barnes and Dr. James, Ottawa; Dr. W. C. McGuire, Cornwall, Ontario; Dr. A. G. Young, Almonte, Ontario; Dr. Langevin, Hull, Quebec.

Auditors—Dr. N. M. Bellamy, Alexandria, Ontario, and Dr. Kennedy, Ottawa, Ontario.

A. B. WICKWARE, Secretary.

LOUISIANA VETERINARY MEDICAL ASSOCIATION.

Monday, February 10, 1919, at 10 o'clock a. m., in the Association of Commerce, New Orleans, La., the Louisiana Veterinary Medical Association held a deferred meeting. Dr. Dalrymple was elected chairman pro-tem, then followed the election of permanent officers:

President—Dr. E. Pegram Flower.

Vice President—Dr. F. J. Douglass.

Secretary-Treasurer—Dr. E. I. Smith.

The president was authorized to appoint various committees to coöperate with the next meeting of the A. V. M. A. in New Orleans and in the meantime the association voted to admit all B. A. I. veterinarians in the state as honorary members.

A large number of men were present and President Flower announced there would be a regular meeting, with a literary program, called at an early date.

E. I. S.,

Secretary-Treasurer.

NEVADA VETERINARIANS FORM AN ASSOCIATION.

On January 30, 1919, twelve of the fifteen graduate veterinarians in the State of Nevada met at the Riverside Hotel, Reno, Nevada, and participated in a banquet, after which an association known as the Nevada State Veterinary Association was formed. The charter members of the association are: L. C. Butterfield, W. B. Montgomery, Edward Records, Geo. E. Bamberger, Robt. Dill, Stephen Lockett, F. H. Baker, R. C. Louck, Geo. L. Nicholas, J. E. Ast, W. E. Yancy, W. B. Earl, Geo. C. Taylor, L. H. Wright, Geo. M. Durkee.

The officers, who comprise the executive committee, are:

President—L. C. Butterfield, c/o Nevada Packing Company, Reno, Nevada.

Vice President—F. H. Baker, Gardnerville, Nevada.

Secretary-Treasurer—W. B. Earl, University of Nevada, Reno, Nevada.

No date was fixed for the second meeting, which will be held at Reno, Nevada, at the call of the executive committee.

W. B. EARL, Secretary-Treasurer.

CONFERENCE OF B. A. I. EMPLOYEES AT NEW ORLEANS.

The spirit that developed at the conference in New Orleans, February 11 to 13, of the employees of the Tick Eradication Division of the Bureau of Animal Industry was expressed in a resolution that said:

“We hereby pledge ourselves to greater efforts in the coming year, to the end that more cattle may be dipped, more ticks be eradicated, and a greater amount of territory be released from quarantine in 1919 than in any previous year.”

This resolution was adopted after Dr. J. R. Mohler, Chief of the Bureau of Animal Industry, had told the fighters of the cattle parasite that they should “Make 1919 the Worst Year for the Tick,” and after Governor Brough of Arkansas had declared that tick eradication is proving the salvation of agriculture in the South.

One way of helping to make 1919 the greatest in the campaign was impressed upon the tick fighters by Dr. R. A. Ramsay, Chief of the Tick Eradication Division. That method is, "Dip That Tick in March." Comparisons showing the greatly less infestation last summer in counties that began dipping early in the season were shown. "Two ticks in March mean thousands in June and millions later" epitomized the prolific productivity argument.

The tick eradicators met in conjunction with the Southern Cattlemen's Association, holding afternoon sessions while the cattlemen met in the morning. Members of each body attended sessions of the other. The cattlemen reiterated in resolutions their strong endorsement of tick eradication and urged the passage of a compulsory tick eradication law pending before the North Carolina legislature. The tick fighters in a resolution expressed their appreciation of the opportunity to meet with the Southern Cattlemen's Association "on this great occasion to further the development of the live stock industry in the South."

Among the speakers were Dr. Tait Butler, who first successfully demonstrated the practicability of tick eradication and who came to the conference to say that he expects to see a tick-free South within a few years; Dr. W. H. Dalrymple, professor of veterinary science in the University of Louisiana, who told the necessity of public confidence to make the campaign a success; Mayor Martin Behrman, who welcomed the tick men to New Orleans; Dr. W. F. Blackman, chairman of the Florida Live Stock Sanitary Board, who discussed the maintenance of morale in the tick eradication forces; State Senator Lee Cazort of Arkansas, who declared he was glad to be among the men who were "making the South tick-free;" W. A. Wallace of the Texas Live Stock Sanitary Commission, who urged effective state coöperation; Dr. E. Pegram Flower, Louisiana State Veterinarian, who described the benefits of the tick eradication law in Louisiana; P. P. Garner, commissioner of agriculture and chairman of the Mississippi Live Stock Sanitary Board, who told how Mississippi cleaned out the tick and said the accomplishment would have been impossible without Federal help; and Dr. C. A. Cary, state veterinarian of Alabama, who said that the new compulsory dipping law in Alabama will expedite the work in that state.

Among the Bureau men who spoke or led discussions were Dr. B. H. Ransom and R. M. Chapin, of Washington, D. C.; Dr. E. L. Bertram, National Stock Yards, Illinois; Dr. Flavus

Weaver, Mississippi; Dr. Z. C. Boyd, South Carolina; Dr. Sid Galt, Texas; Dr. C. J. Becker, Alabama; Dr. G. W. Rosenberger, Georgia; Dr. John E. Bender, Alabama; Dr. E. L. Wilson, Oklahoma; Dr. W. H. Beck, Texas; Dr. S. V. Ramsay, Florida; Dr. L. M. Buffington, Arkansas; Dr. W. K. Lewis, South Carolina; Dr. Edward Horstman, Louisiana. F. W. P.

Dr. W. R. O'Neal has moved from Newman, California, to 93 Belmont Avenue, Fresno, California, where his son, Dr. F. L. O'Neal, will be associated with him in practice.

NECROLOGICAL.

LIEUTENANT NATHAN W. ROBIN.

Lieutenant Robin died at Camp Wheeler, Georgia, on November 3, 1918. He was born at Slonin, Russia, in 1891. He graduated from the Chicago Veterinary College in 1915, and joined the A. V. M. A. in 1918. Before entering the army, Dr. Robin was connected with the Whipple Veterinary Hospital at Peoria, Illinois. His body was brought to Peoria for interment.

DR. FREDERICK H. WERNER.

Dr. Frederick H. Werner of New York City died January 30, 1919, after a brief illness, at the age of 42.

Dr. Werner was a graduate of the Veterinary Department of New York University, class of 1901. He had built up a very extensive practice in the Yorkville section of the metropolitan district. He was a 32nd degree Mason, and also an active member of the Order of Elks. A widow and two daughters survive him.

REVIEW.

ATLAS OF THE VISCERA, IN SITU, OF THE DAIRY COW.

GRANT SHERMAN HOPKINS, New York State Veterinary College, Cornell University, Ithaca, N. Y. (\$1.75. Publishers, The Macmillan Company, New York, 1918.)

The purpose of the author has been to meet the needs of the veterinarian and the veterinary student by exhibiting in concise and graphic form the location and relations of the digestive, respiratory, and genito-urinary organs of the dairy cow, which he has admirably succeeded in through ten beautifully executed plates reproduced from photographs of the cadaver suspended in normal position, and with the different organs exposed in situ. Important blood vessels are colored so as to stand out in contrast to their surroundings, which makes them easily distinguishable.

Related to each of the ten plates is a key index which enables the student to locate at once the different organs exhibited. In addition, there are 23 pages (8 x 5½) of reading matter descriptive of the different viscera, their attachments and relations, forming a lucid text on the subject, the whole showing a great amount of patience and attention to detail on the part of the author, which we feel is sure to be appreciated by both student and practitioner who wishes to become more perfect in the anatomy of the systems of the cow treated by the author.

Dr. Hopkins is to be congratulated on this excellent piece of work, which we consider of great value for the purpose he has intended it, and the publishers have executed their part well, as is their wont. If any criticism might be made, it would be, that such excellently prepared text and illustrations, etc., are worthy of a more substantial cover.

W. H. D.

MISCELLANEOUS.

THE VETERINARY INSPECTOR.

Oh, the meat we eat and the milk we drink
Is guarded from taint and from stain
By a faithful agent of Uncle Sam,
But few ever hear of his name.

No flaring headlines sound his praise
Nor trumpets nor martial band;
But quietly, tirelessly, day by day,
He's defending the health of the land.

And though there be millions of people who owe
So much to this able protector,
Yet few there are who have spoken a word
For the Veterinary Inspector.

But ever he wages unceasing war
On diseases of man and beast,
Sheep scabies on the Western range—
Tuberculosis in the East.

He has won success in his war against
The fever tick of the South.
He has thrice saved the North from the ravages
Of the virulent "Foot and Mouth."

He has driven from thousands of Iowa farms
The deadly cholera of swine,
He has conquered dourine in the far Northwest,
And anthrax on the Gulf Coast line.

When we gather around the festive board
We are sure of a wholesome repast,
For we know that our sirloin, bacon and ham
Are "U. S. Inspected and Passed."

And while he is doing so much for us all
Let none of us ever forget,
That we can also do much for mankind
When we honor the Government "Vet."

HAROLD N. GUILFOYLE.

VETERINARY OFFICERS' RANK.

Notwithstanding a recent opinion of the Attorney General to the contrary, the Comptroller of the Treasury has not revised or modified his decision that no officer could hold a commission in the Army Veterinary Corps above the rank of captain. The effect of the Comptroller's decision is demoralizing upon that corps, preventing as it does the formation of a permanent organization on a basis that is equitable to veterinarians of long service in the army.

The difficulty has been overcome for the time being by commissioning some veterinarians temporarily as majors in the army at large, but this expedient cannot continue after the temporary forces are demobilized. The Veterinary Corps has rendered notable service during the war, and it is considered most unfortunate that the personnel cannot be held intact and with the same opportunities for advancement to higher grades as are allowed other arms of the service.—Ex.

Captain Otis A. Longley of California, recently on the staff of instructors at Camp Greenleaf, was a visitor to the New York City Association at its January meeting.

Captain H. Ticehurst of New Jersey, recently Division Veterinarian at Camp Sheridan, Alabama, has been released from the service and returned to practice at Morsemere, New Jersey. In January Captain Ticehurst addressed the annual meeting of the New Jersey State Veterinary Medical Association.

Dr. J. D. Koen, president of the N. A. B. A. I. Veterinarians, strongly urged before the House Agricultural Committee at Washington higher salaries for the Bureau veterinarians.

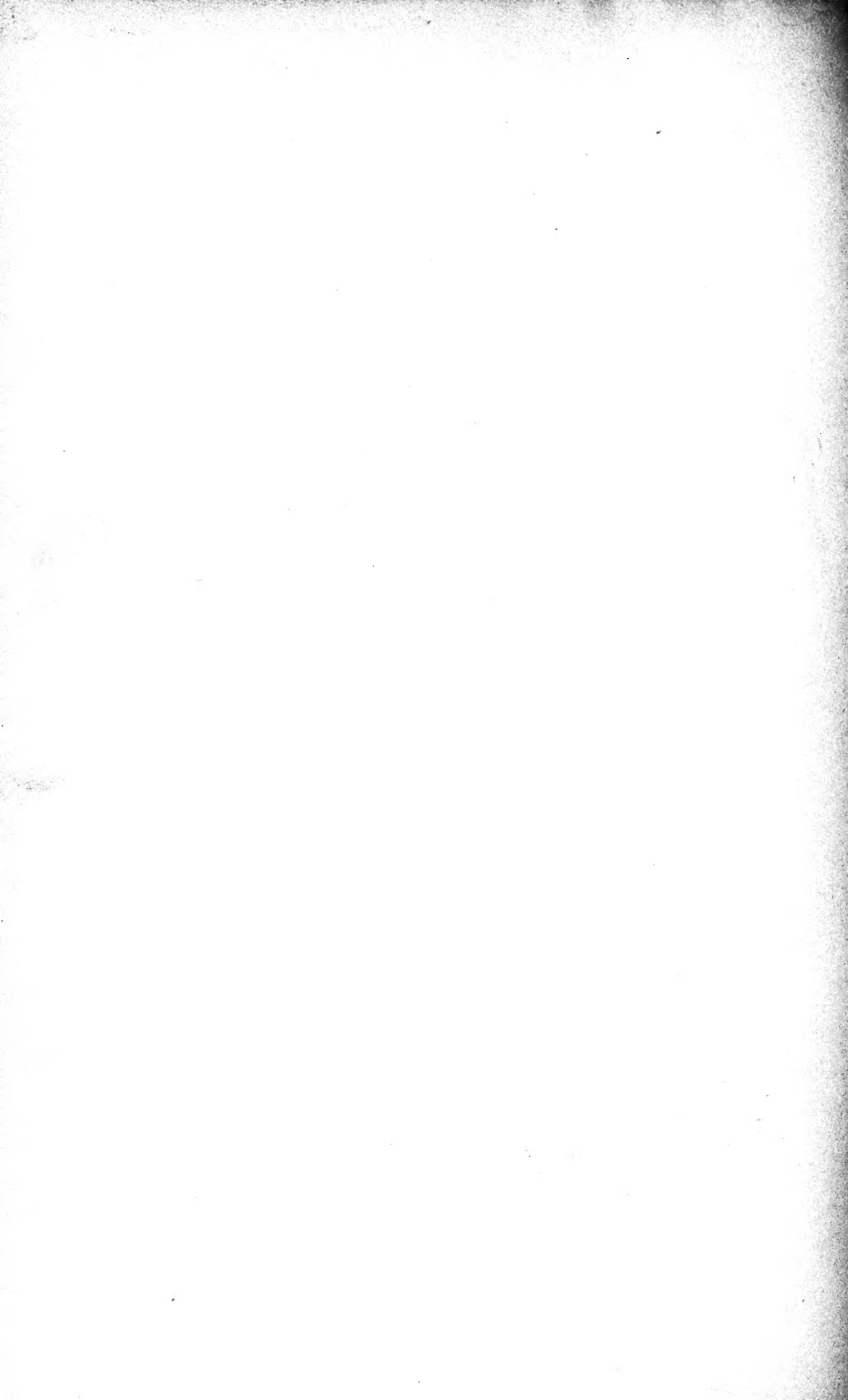
Professor Wilfred Lellman of the New York State Veterinary College, New York University, was suddenly stricken with appendicitis in January. Prompt operative interference gave quick relief and his recovery is assured.

Dr. W. E. Dodd, B. A. I., has been transferred from Des Moines, Iowa, where he was engaged in hog cholera eradication work, to Little Rock, Arkansas, to continue similar duties. His address will be Old State House, Little Rock, Arkansas.

Among those recently discharged from the army is Lieutenant F. R. Ewing, who has resumed his practice at Shreve, Ohio.







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